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विश्वविद्यालय के संस्थापक

पूज्य महामना

हिताय सर्वलोकानां निग्रहाय च दुष्कृताम्,
धर्मसंस्थापनार्थाय प्रणम्य परमेश्वरम् ।
प्रसादाद्विश्वनाथस्य काश्यां भागीरथीतटे,
विश्वविद्यालयः श्रेष्ठः हिन्दूनां मानवर्धनः ॥

जन्म :—वि० सं० १९१८ पौषकृष्ण ८ (२५-१२-१८६१)

मोक्ष :—वि० सं० २००३ मार्गकृष्ण ४ (१२-११-१९४६)

विषय-सूची

THE MIND AND SPIRIT OF PLATO'S DIALOGUES*
(With reference to the Modern Nuclear Age)

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The immortal Dialogues of Plato have been the ever-green fountains of the main under-currents of thought in the West. The Dialogues, composed about twenty-three centuries ago, have enjoyed to this day the unique status of being the most inspiring and instructive body of philosophic literature in the West; and the Universities of both East and West (excluding the Communist countries) pay their homage to Plato and study his works. Remarkable it is that when most of the past philosophers are collapsing at the onslaught of modern science, Plato still commands the respect of the scholarly world: while the mystical eyes of Emerson feel that "Plato is philosophy and philosophy Plato", the scientific eyes of Whitehead look upon Plato with infinite admiration and regard 'the entire Western thought as grand foot notes on Plato'. And even the great critics of Plato concede that even when the worst is said against Plato, still "the Dialogues remain priceless treasures of the world" and acknowledge his unique influence on Western thought. In short, no other thinker has influenced the West as much as Plato has; and the works of no other philosopher have been so much studied and commended upon as Plato's Dialogues have

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*This Paper is the introductory chapter of a book (with the same title as this) under preparation.

In this Paper, the need of a fresh exposition of Plato's thought is explained; and it is shown that Plato's Dialogues are relevant to the present age. What is shown is that Plato wrote his Dialogues to answer the questions raised by an intellectual age which raised the very same questions raised by the present scientific age; and, therefore, the questions discussed and resolved by Plato are indeed the intellectual questions of the present age.

Since diverse problems are briefly dealt with in little space, the purport of the discussions at successive stages of this Paper will become evident only at the concuding stage.

been. But the wonder of wonders is that, inspite of twenty-three centuries of study and scholarship, the central thought and message of Plato have been missed by the West: What have inspired and influenced the West, throughout all these centuries, have been only the outer flashes and secondary truths rather than the central philosophy underlying the entiere body of the Dialogues. This failure to discover the basic thought and purpose of Plato accounts for the amazing magnitude as well as the bewildering variety of commentaries heaped upon Plato. What is endeavoured in this study is to reveal the central thought and meassage of Plato; and to represent the apparently scattered pieces of Dialogues as the intelligent unfolding of a virile mind informed with the vision of reality.

A brief explanation is necessary to account for so many generations blundering about the basic thought of Plato. The explanation may be started with the explanation and confession, in this regard, of Burnet, the eminent scholar on Greek thought: "It is by no means easy for us at the present day to interpret the central doctrine of Plato's philosophy. As we have seen, he did not choose to commit it to writing, and we are almost entirely dependent on what Aristotle tells us. What makes matters worse is that Aristotle is an unsympathetic critic of Plato". (Greek Philosophy, p. 312). This is nothing but a confession of failure and surrender both at once as the explanation is nothing more than a mere excuse. The plea that Plato wrote all these Dialogues, dealing with the central problems of life and conduct, without any basic thought and purpose is simply obsurd: to imagine that Plato, the teacher of mankind, transmitted to posterity only the streams of his thoughts and not his wisdom, is utterly fantastic. On the other hand, the discussions in every page of these thrilling Dialogues mirror a purposive mind working with a uniform spirit. Of course, the first culprit who gave a wrong turn to Plato's thought was none other but his own illustrious pupil, Aristotle, who not only loved his own philosophy more than he loved Plato but also set up his own academy as a rival to the Platonic academy. If everything

is fair in love and war, Aristotle may be excused. However, the sweeping verdict of Rusell in his book "The Scientific Outlook", p. 43, that "Aristotle has been one of the greatest misfortunes of the human race", seems most appropriate and true in this role of Aristotle as an interpreter of Plato. What all Aristotle spoke on Plato possessed a unique authority over posterity: as Aristotle was himself a great philosopher, no body doubted his capacity to understand Plato correctly; and as he was the pupil of Plato, nobody suspected his honesty in the exposition of Plato.

However, the entire blame for centuries of misinterpretations on Plato could not be put on the single head of Aristotle. There were more resolute and systematic hands at work in deforming Plato: the hands of the Christian theologians who expounded the thought of Plato with a view to supporting and supplementing their own vested dogmas. In fact, the theoreticians of the Church put Plato in a Christian garb: to be sure, the association and grace of Plato could render any theology appealing and graceful. Thus centuries rolled on with Plato wearing the theological garb of a Christian mystic. But the dawn of the Renaissance stripped Plato of his Christian robe, and sounded the need of a free approach to Plato's Dialogues.

The free and objective study of Plato, inaugurated by the Renaissance, did not rise to any heights: the so-called free and dispassionate approach only created a new era of chaos and confusion in Platonic study. The deep thought and purpose of a great thinker is seldom grasped by the superficial eyes of the so-called free scholars who are devoted to no faith and animated by no deep purpose, except that of mere scholarly curiosity. The dispassionate eyes of the curious scholars could not penetrate beyond the layer of superficial confusions and contradictions in the various Dialogues; and the glaring inconsistencies brought out by these scholars excited the later scholars to challenge the very genuineness of many Dialogues. And a batch of acutely critical scholars came forward in the 19th

century to conduct the campaign of hunting out the spurious Dialogues, from the traditional collection of Platonic works. Of the thirty-six Platonic Dialogues, regarded as genuine down to the 18th century, only a few could survive the critical test of the scholars : the majority of the Dialogues were condemned as spurious and a few were red-marked as doubtful : But such a large scale condemnation of the Dialogues, by different scholars on conflicting grounds, naturally evoked a reaction ; a new wave of scholars re-examined the matter and re-established the genuineness of most of those Dialogues condemned by their predecessors. The prevailing view to-day is that most of the Dialogues, and especially all the important Dialogues and Epistles are genuine works of Plato.

And the general view of the scholarly world is that the Dialogues are the occasional works of a great thinker on diverse problems at different stages of his life ; and that to look for any unity of thought and purpose in such a variety of Dialogues composed with such intervals is rather stupid !

Such has been the unfortunate life of Plato's Dialogues. Even now there is no unanimity among scholars on many preliminary questions about the Dialogues ; and conflicting theories are current on various aspects of these great Dialogues. To be sure, there will be no unanimity on any issue nor any end to conflicting theories of scholars until the central thought and purpose of Plato is discovered, and the apparent inconsistencies cleared off by the light of the inner mind and spirit of the Dialogues.

Whatever might be the perversions and confusions in the scholarly world about Plato and his works, the name of Plato will ever shine in the intellectual horizon of the world and the charming Dialogues will continue to stir the minds of the readers. But the so-called Platonic doctrines, as presented by scholars now, make a disgusting impression upon modern students. Plato, the great champion of reason and of the rational path to knowledge, is represented today as the father of dogmatic ideas and mystical truths. As long as the religious

and mythological traditions were alive in the West, such dogmatic representations were swallowed by students as mystical truths. The Platonic ideas that are well established in the scholarly world are : that the real world is the world of ideas and not the objective world seen by the senses ; that man does not get true knowledge from the world without, but all true knowledge comes from within by a process of recollection ; that art and poetry, as a rule, are imitations of imitations, thrice far off from reality, and must be suppressed as far as necessary ; and that the ideal state is a regimented, hierarchical state, governed not by laws but by the free intelligence of a philosopher-dictator, assisted by an army of resolute men, without private family and private property, living upon the Government subsidy of women and funds. Certainly the modern mind feels an aversion to such ideas. The attitude of the typically modern mind to such doctrines of Plato is boldly expressed in the introductory remarks of Russell, in his exposition of Plato (in his book, History of Western Philosophy, p. 122) : "Plato possessed the art to dress up illiberal suggestions in such a way that they deceived future ages, which admired the Republic without ever becoming aware of what was involved in its proposals. It has always been correct to praise Plato, but not to understand him. This is the common fate of great men. I wish to understand him, but to treat him with as little reverence as if he were a contemporary English or American advocate of totalitarianism". Russell, however, did not show any better understanding of Plato but only criticised the so-called Platonic doctrines with the spirit of a rebel. Of course, the criticism is right and Plato does not deserve any better treatment as a thinker if his thought is nothing more than a collection of the so-called Platonic doctrines.

That a new exposition of Plato is necessary to commend Platonic doctrines to the modern age, is however not the reason for the present study. On the other hand, the impulse for the present work has issued from the conviction that the real thought unfolded in the Dialogues has a different (as compared

to the prevalent interpretations) inner story which furnishes the final answers to the central questions of human life and conduct. Since Plato dealt with all aspects of man and society, a correct understanding of Plato would necessarily throw light on a wide range of topics such as philosophy and religion, eithics and politics. And as Plato summed up the entire Greek thought before him, a correct understanding of the Dialogues is indispensable for a clear picture of Greek thought in general ; for the Dialogues have been the main sources of information about the thought of Plato's predecessors. In fact, it is no exaggeration to say that the Dialogues is a refined, artistic replica of the historic course of Greek thought from its primitive simplicity to the zenith of wisdom in Plato : the vision and wisdom of the Dialogues, viewed in the larger perspective of a nation's life, are only the vision and wisom of the Greek mind after centuries of 'experiments with truth'. Only when the Dialogues are read in this broad perspective, one can enter into the inner mind and spirit of these works. And such a comprehensive approach alone can reveal the mind of a great thinker born at the historic juncture of a national crisis, both intellectual and cultural. That is precisely the general approach of the present work.

Now a challenging question stares in the face of this work : what is the need of digging out primitive wisdom in this modern age ? Why should the rapidly progressing modern scientific age be embarassed with what Plato thought in the ancient unscientific age ? That is to say, what is the relevancy of Plato in this nuclear age ? To all appearance, the question is a very legitimate one and demands a thorough examination. And a fully satisfactory answer to this question alone can give sanction to the present work on Plato in this nuclear age.

Relevancy of Plato in this Nuclear Age

True, in this atomic age of nuclear weapons and television sets, it would appear preposterous to summon the attention of the world to the wisdom imparted by Plato in the ancient

unscientific age of battle axe and javellins. But the appearance is only a superficial appearance, as the truth is the very contrary : of all Western thinkers, ancient or modern, Plato is the only philosopher who is really uptodate in this post-atomic age. But how ? To comprehend it one has to listen to the curious story how modern nuclear physics has rendered Plato as up-todate in this nuclear age as he was in the sophistic age of classical Greece.

1. Modern Science and the Limitations of the Scientific Method

To take up the problem of modern science and its metaphysical implications : The explosion of the atom bomb in fact marked the inauguration of a novel era in the course of world history. The atomic age is indeed an age of marvels and paradoxes. The greatest weapon of war has served as the best security of peace : for nuclear weapons have rendered world wars an unprofitable enterprise and a self-destructive adventure. But the most striking paradox is that the highest triumphs of science have at once demonstrated the might of science as well as revealed the basic limitations of science. The great scientists of the world realised that the essential reality of the world defy all scientific investigations. Science can know only the manifest behaviour of reality but not the reality itself : and now the scientists acknowledge that "the question as to the nature of an electron or proton is by no means answered when we know all that mathematical physics has to say as to the laws of its motion and the laws of its interaction with the environment" (Russel, ABC of Relativity, p. 137). In fact, with the explosion of the atoms, the traditional scientific belief in a material or atomic reality too exploded*. And as atoms ceased to be an ultimate indestructible entity of the universe, science advanced from the mechanics of atoms to 'wave mechanics'. Science has thus become at once proud and humble ;

*Refer to the extension lecture of the eminent physicist Dr. B. Dayal (B.H.U.) Published in B.H.U. Gazette (26/1/63) under the title "All matter is wave".

and a ray of humility pervades the best scientists as they feel that they can know much about the manifest behaviour of things but nothing about their essential substance or reality.

Today amidst the large literature on science, there is a new variety of literature, the purport of which is not to publish the achievements of science but to demonstrate, from the basis of science itself, the basic limitations of science. 'The Nature of the Physical world' by Eddicton, 'our knowledge of the External World' and 'the ABC of Relativity' by Russel, 'The Mysterious Universes' by James Jeans, 'The Limitations of Science' by Sullivan, 'Science and the Modern World' by Whitechead, 'Mind and Matter' by Schrodinger—these are some of the outstanding works in this direction. These scientists and thinkers are unanimous in proclaiming the 'patent dissolution of scientific materialism'; and they assert that even the highest scientific knowledge does not and cannot go beyond furnishing a symbolic pattern of the relative behaviour and manifest processes involved in apparent things. Russel categorically concludes his interesting exposition of ABC of Relativity (pp. 142—44) as follows: "What we know about the physical world, I repeat, is much more abstract than was formerly supposed. Between bodies there are occurrences, such as light waves; of the laws of these occurrences we know something, just so much as can be expressed in mathematical formulae—but of their nature we know nothing. Of the bodies themselves, as we saw in the preceding chapter, we know so little that we cannot even be sure that they are anything: they may be merely groups of events in other places, those events which we should naturally regard as their effects. We naturally interpret the world pictorially; that is to say, we imagine that what goes on is more or less like what we see. But in fact this likeness can only extend to certain logical properties expressing structure, so that all we know is certain characteristics of its changes.........Assuming the utmost that can be claimed for physics, it does not tell us what it is that changes, or what are its various states: it only tells us such things as that changes follow each other periodically, or

spread with certain speed........... However, the physicist who knows nothing of matter except certain laws of its movements, nevertheless knows enough to enable him to manipulate it".

This confession of science that its field is limited to the manifest motions or process of reality and that it cannot know the essential nature of reality immanent in the universe, is a historical event of momentous significance. For it proclaims the limitations of the scientific method not only in physical sciences but also in all social sciences as well. As the physical scientist can tell the pattern of the phenomenal process or behaviour in the physical plane, so the social scientist can tell the general pattern of the psychological process or behaviour involved in the political or economic plane. As the physical scientist can tell the general laws of the physical phenomena, so also the social scientist can tell the general laws of social phenomena : but neither can, by means of the scientific method, know the reality or substance of the phenomenal process they investigate and reduce to a conventional pattern. Both the physical and social scientists are limited to the study of only phenomena ; and both can give a picture of the general laws of the phenomenal process ; and the general laws furnished by both belong essentially to the same species, as demonstrated by the modern scientific theories : "theory of uncertainty", "theory of probability", and "theory of relativity", And finally, as the physical scientist "who knows nothing of matter except certain laws of its movements, nevertheless knowns enough to enable him to manipulate it", so also the social scientist who knows nothing of the essential reality of man or of society except certain modes of its behaviour or movements, nevertheless knows (as Hitler, or Mussolini or Stalin demonstrated) enough to enable him to manipulate it.

The nature and limitations of the scientific knowledge whether of the physical or social and psychological plane, must be clearly grasped. What can be known by the senses from the external world by the scientific method of observation, collction

of data, inference, etc., is only about the general pattern of the manifest behaviour (relative to the observer) of the physical or social and psychological phenomena; and by means of this scientific knowledge one can manipulate the social and political process or the forces of the physical world. That is to say, science knows nothing of the essential nature of the reality of man or of the universe or even of an electron; but nevertheless it can furnish a picture of the pattern of the phenomenal process and thus furnish a clue to the technique of manipulating this process. That means scientific truths have no metaphysical validity nor are they any universal truths or objective realities in the true sense of the term: on the other hand, scientific truths are only relative truths having pragmatic validity and symbolic significance.

Now the momentous significance of the scientific discovery of the limitations of the scientific method and scientific knowledge is obvious. Science can be of assistance to man only as a technical assistant: it can suggest to man the practical techniques (as well as technical institutions or instruments) to attain the ends of man. But science, ignorant as it is of the nature of either the macrocosm or microcosm (man and the universe), cannot be of any guidance to man in ascertaining the true ends of life. For it is impossible to know the ends and ideals of human life without knowing the essential reality of man. In short, science and its pragmatic theories on practical techniques can only be the servant of man, man's instruments to attain his true ends (of life) which however are beyond the ken of science. This is the historical significance of the nuclear age: the nuclear age has exploded the arrogant confidence of science that it can answer all questions and solve all problems of man: the post-atomic age at once exposed the superficiality fo science as well as revealed that science can neither tell man any real truth nor solve any enduring problems of life.

But science realised its own superficiality too late. In the meantime much mischief has been done. In the first flush of its puberty, science pursued the perverted scheme of replacing

the traditional culture based upon religious faith and spiritual values, with a scientific culture based upon a scientific knowledge of man and the world. Fully confident of its omnipotence and historic mission, the aggressive scientific spirit not only challenged the very foundations of traditional religion and culture but also annexed all social studies and social conduct (including ethics) from the sphere and influence of the traditional religious culture. When the spiritual values of a national culture cease to influence social sciences and social conduct of a people, the national culture is virtually dead. The successful assault of the scientific spirit gradually paralysed the will and spirit of the traditional culture of the Wesst. And upon the ruins of the traditional Christian culture rose the collosal scientific culture of the modern age. But now the nuclear age has brought the news that this scientific culture is only a monster without any real truth and foundations. Not only that: it is revealed that the very notion of a scientific culture based upon scientific knowledge of man and the universe is absurd; for science, it is proved, is congenitally impotent to apprehend the essential nature and purpose, the inner truth and innate ideal, of either man or the streaming universe.

Thus the West has now arrived at a crossroads that was reached by the Greeks in the age of Socrates and Plato: The will and spirit of the traditional culture is killed and the eternal verities of it are no more; and the atomic material of the scientific culture melted off as waves in to an incorporeal ocean: the net result is that the Western mind has no reality to rest upon and no cultural values to strive on and live for. Perhaps an index of the magnitude of the crisis be noticed from the bloom in the sale of sleeping pills, the thriving profession of prychiatrists, the large-scale dissolution of marriages, the growing number of suicides and the increasing popularity of perverted politica parties. Of course party spirit and party slogans can absorb the mind and suspend the crisis; and also sleeping pills and prychiatrists can administer a sort of relief: but how long and what for? This is the essence of the crisis of the West which is now spreading east-wards.

To follow the present study, it is of utmost importance to grasp the basic root of the crisis of the Western scientific culture or rather Western civilization. A scientific culture literally speaking is essentially baseless. For science (it is necessary to repeat again) can only furnish man with the techniques for manipulating the objective phenomenal process (including social and political) to attain the desired ends of man. In the final analysis, all scientific knowledge, nay, all knowledge derived from the external world through senses, is only a relative derivative knowledge of the phenomenal process or behaviour ; and the only validity of this knowledge is its practical workability. That is to say, science can assist man to attain what he desires ; in other words, the entire tree of scientific knowledge is only an armoury of instruments in the hands of man to fulfil his desires. Now the great question arises : True, man has the means to satisfy his desires ; but what is the knowledge or principle according to which the desires and life-course of man are to be determined and disciplined. Mere sense satisfaction cannot be regarded as an end of life, for such sense pleasures are transitory and purposeless in itself. It is obvious that the only knowledge that can give an absolute standard for disciplining desires and regulating the whole course of life, is the knowledge of the inner truth and innate ideal of man and the universe. Such knowledge alone can give meaning and purpose for life ; and that knowledge can discipline life, regulate desires as well as utilise the scientific instruments for the fulfilment of the ends of life.* But the scientific culture does not have such a knowledge nor is it capable of obtaining it. Hence, in a scientific culture desires shall command man rather than man commanding desires. There are no inner principle to restrain man ;

*Perhaps it might appear that individuals can live according to sensations, instincts and impulses. But what about a national culture. Certainly a national culture or national legislations can not be based on mere sensations of fleeting phenomenal appearences or on momentary impulses : A nation's life must be based on the knowledge of reality : that is, a national culture must be built on reality and not on superficial appearences or on momentary impulses.

and no ideals to discipline life. Pursuit of pleasure and power become the sole object, and practical success, the sole ideal of life, the national ideal. Naturally ruthless struggle unrestrained by moral scruples become the common order. But in this ruthless struggle for success, there is no inner faith and ideal to sustain the nerves and steel the heart ; hence the casualities are too many and those who fail break easily. Further, once the practical success is attained and passions exhausted, there is nothing to sustain man. Only as long as the struggle for success is progressing satisfactorily, there is a temporary integration of man for practical purpose at hand. In all other cases, the condition of man under the armour of scientific culture is a tale of inner anarchy and, therefore, of utter misery. The suicide of Marlyn Monroe at the height of her glory, and the life and tragic death of Ward (of the Profumo scandal) are eloquent illustrations of the cultural bankruptsy of the so-called scientific Western culture.

2. Modern Western culture and Pragmatist Philosophy

The Western scientific culture is however not devoid of a philosophical support. The philosophy of Pragmatism has emerged from the heart of the scientific culture with the mission of sanctifying the superficial, utilitarian character of the scientific culture as well as to inspire and invigorate it with a testament of pragmatic faith. No doubt, pragmatism did its allotted job rather too seriously and vehemently ; and John Dewey* deserves special credit for rescuing the scientific culture from its baseless condition and raising it to the forefront of the cosmic process as the crown of organic evolution. He took to this historical task with the authority of a scientist and with the spirit of a missionary ; and he adopted from the outset an offensive strategy. Those who laughed at the impotence of science to grasp reality and criticised the superficiality of scientific culture, were silenced

*John Dewey (1859-1952) is the most uptodate exponent of pragmatism. The present discussion is primarily based upon three of his works : Reconstruction in Philosophy ; Human Nature and Conduct ; The Influence of Darwin on Philosophy.

by the pragmatist philosopher with a categorical declaration that there is no absolute reality behind the ever-changing cosmic process, nor is there any need of absolute truths for man to solve the varying problems of his practical life on this dynamic world-process. To the charge that scientific knowledge has only a mere instrumental value for practical action, the pragmatist philosopher accords a friendly welcome ; for this charge, points out the pragmatist, only confirms the fundamental tenet of pragmatism that knowledge has no other purpose or significance than to be of instrumental value in the immediate practical activities of life.

Human life, argues the pragmatist, is a strictly practical life ; all phases of life are practical activities, and all its problems are practical problems : it is only to solve practical problems the organism gathers practical experiences from its incessant practical activities. The knowledge derived by an organism from its initial experiences has only a provisional value ; but such provisional knowledge, when confirmed in further activities, stands verified as true and becomes a reliable instrument of life, demonstrating its truth in the practical field of life. Practical activity is the source and end of knowledge: knowledge is experimentally derived from practical experiences and is of instrumental value for further activities. Thus, experimentally knowledge emerges from the practical process of life and instrumentally it functions in practice ; and practical workability is the sole criterian of truth. Successful practical activity with reference to practical needs, is the 'be all and end all' of all human knowledge. In other words, the sole purpose of knowledge is to impart man practical virtue (efficiency) and lead him to practical success in the incessant struggle, with the environment, to solve his practical needs : indeed, there is no other virtue nor is there any other success, either for man or any other species.

True, scientific knowledge, continues the pragmatist, is only a relative. knowledge of the conditional behaviour of the objective environment ; but this knowledge is sufficient for man,

because the knowledge of the objective environment or things is sought by man or any other animal, only for the purpose of manipulating it to solve his practical problems and needs. There is of course no denying the fact that such knowledge of the conditional behaviour of environment under certain operations by the organism, does not and cannot reveal any existing reality. But those who condemn the scientific knowledge on this score, only betray their stupidity; because there is no necessity nor any possibility for man to obtain any other knowledge about the external world than the scientific knowledge about the practical technique of manipulating it for human needs. That no other knowledge of the external world is possible, will be evident if one only cares to examine the source as well as the integral organic process of human knowledge. The only source of human knowledge is sensible experiences, to speak literally. But sensation or sense experience is not, and cannot be, a revelation of any existing reality in the external world, for the simple reason that a sensation, strictly speaking, is only the consequence or effect of a certain kind of operation on the environment by the human organism. If such consequences or effects are all that man experiences immediately from the environment, then there is no possibility nor any question of obtaining any knowledge of an existing reality from the external world. All the experiences of man in fact denote only a process. Indeed, an examination of the integral psychological process of man only confirms this truth, because such an examination of the inner world does not reveal any existing reality or soul, but only an integral process of experiences. Thus, the basic experiences of man do not denote any absolute truth or existing reality. In fact, modern science has revealed to man that the objective material world is really a terrible world of restless process; and the scientific psychologists too reveal only an inner psychological process and not any absolute existing reality within*. Verily, the great truth is

*Curiously enough, now when the scientists declare that all matter is wave", the Psychologists assert that all thought and sensations are psychological waves.

that there is no absolute truth or absolute value in this world of everchanging cosmic process and organic evolution; and that all knowledge and truths of man are temporary practical truths, possining no other virtue than that of practical workability in the practical life of man. "There are so many geometries, so many logics, so many physical and chemical hypotheses, so many classifications, each one of them good for so much and yet no good for everything, that the notion that even the truest formula may be a human device and not a literal transcript has dawned upon us. We have scientific laws now treated as so much 'conceptual short-hand', true so far as they are useful but no farther" (James, Meaning of Truth, p. 58).

To know the essential nature and purpose of human knowledge, it is instructive, says the pragmatist, to trace its evolutionary course in the general organic evolution of the species. Perhaps a scientific observation of the technique by which an earth-worm adjusts itself and live in its environment, might remind man about the essential source, purpose and nature of human knowledge. Those who observe the practical process through which tiger kids learn with their mother how to approach, catch, kill and eat an animal prey would be enlightened about the biollgical root and behaviorist nature of human knowledge. The integral organic process of practical life with its practical needs, activities and experiences—is the source of all the faculties of man, such as the special senses, intellect, logical thought, etc. All these faculties are instruments organically evolved by the species after ages of organic evolution, involving the integral process of practical problems and activities, practical experiences and further activities for satisfying the ever-increasing needs by greater control over the environment. An insight into the biological genesis and integral organic functioning of these faculties would reveal the integral organic behaviour involved in sense experiences as well as in thought; and such an understanding would enable one to see the basic blunder of the early materialists who regarded sensation as mere mechanics of atoms, and explained thought as consisting of

motions of atoms (like billiard balls) in the head. A grasp of the biological genesis of knowledge can alone fully reveal the integral organic behaviourism, involved in sensation and thoughts. Viewed in the perspective of organic evolution, it is evident that intellect and thought, logic and reasoning, language and sciences, arts and crafts—all these are tools, mere practical instruments, developed by the organism to solve its practical needs at successive stages of evolution. These instruments, designed as they are for purely practical purposes, can only help man for practical action, as practical instruments. Of all these instruments, the development of language brought a great transformation in man, from an animal of limited experiences and possibilities to one of unlimited experiences and possibilities. But those who forget the instrumental nature of intellect and logic and also of (symbolic) language, are apt to delude themselves with the hope that logical thought can lead man from relative practical truths to absolute truths or absolute reality. All thought, it must be noted, is only a symbolic operation, like mathematics which start with symbols and end in symbols. As symbols denote sense-experiences, all symbolic thought, starting and ending in symbols, can reveal only what symbols represent or can represent. Experiences are the sole stuff of logical thought at every stage of its operation. A house built with mud is only a house of mud, however grand the design of the house may be. So also the symbolic thought ends in symbols which refer to sense experiences about the behaviour of phenomena. And as the truth of all knowledge is verified only in practice, logical conclusions are mere hypotheses which can attain 'truthhood' only in the practical field of action.

The intellect and logical thought, true to its essential purpose and role, is confined to practical needs and practicae knowledge. Any attempt to discover absolute reality or absolute truths by logical thought is really a misuse of the faculty. Anybody who observes, says Dewey, the swarm of philosophers in the West and the narrow outlook of their

logical philosophies would certainly feel that the entire Western thought "seen in the long perspective of the future is a provincial episode" (Contemporary American Philosophy, Vol. 2, p. 26). To avoid the repetition of such outrageous misapplication of the logical faculty, it is necessary to keep always in mind that intellect and thought, logic and laguage, etc., are only the practical instruments designed and fitted by the organism to conduct successfully its unbroken practical journey of life. In such a restless journey, if the intellect goes mad after the search of useless, non-existing realities, what would be the plight of the poor organism, who developed these instruments for its own constant practical guidance and needs? Such misusage of the faculty cannot but degenerate the faculty and decay the organism: the spectacle of the miserable physical and mental condition of abstract scholars and logical philosophers ought to serve as a practical warning to mankind to refrain from useless nonsenses.

Now it is necessary, says the pragmatist, to stretch the vision a little further in order to comprehend the same experimental process working in the social process, leading to more and more practical adjustment and practical success to individuals. Social and political institutions are only the instruments evolved by man to solve his practical problems; and the institutions are nothing but the expression of the established pattern of the practical activities of the people. Laws and customs, rules of morals and codes of honour—all these are evolved experimentally and functions instrumentally in the social process. The significant point to be noted is that all social, political, and moral truths are only relative practical truths, possessing no other value or virtue than the virtue of practical workability. There is no absolute truth either in morals or in science. With the advent of the modern scientific theories "of probability", "uncertainty" and of "relativity", the primitive age of absolute truths is completely superceded by the scientific age of relative probable truths. There is no absolute constitution or institution true for man for all times:

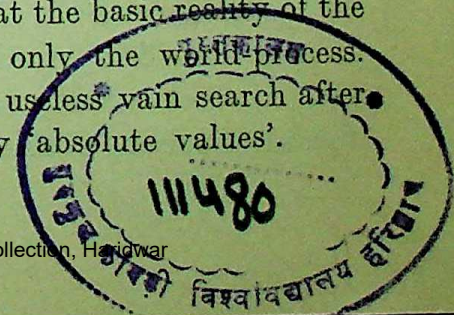
they do change and must change according to the practical needs of an ever-evolving species. For what is true today may be untrue after an year ; and what is moral in one society may be immoral in another society. Nay, to speak with sciensific precision, what is true and good to one man may be untrue and bad to another man of the same society and at the same time ! What Protagoras, the ancient sophist, said in the fifth century B.C. is still scientifically true today "what is true and good to me is true and good to me ; what is true and good to you is true and good to you". However, the central fact to be noted is that laws, constitutions, moral codes, etc., are a sort of working order experimentally selected and provisionally adopted, and which is ever evolving according to the pressure of practical forces and needs. And every age must see that social and political institutions are made uptodate according to the needs of the time and corresponding to the latest scientific knowledge and techniques or instruments.

What is true of social and political institutions, points out the pragmatist, is also true of religious institutions. Religious beliefs are as much instruments of life as scientific truths are. For instance, the notions of a truly ideal God without, and a real self within, in a way help the integration of the psychological process so much necessary for effective practical action. However, religious beliefs must be made uptodate so as to conform with current practical needs and scientific experiences. The beliefs suited to a primitive society certainly serve no purpose in the modern nuclear age. The modern age needs a scientific religion which can instil in man the proper psychological frame warranted by the modern needs and appropriate to the modern scientific culture. If one only keeps in mind that religious beliefs are instruments experimentally evolved to suit the needs of practical life, one can design the articles of faith that would suit the spirit and needs of the present scientific age. Of course, no child can be initiated into the scientific knowledge of the present age directly ; he can be educated only through symbols, stories, and myths.

These myths and stories are mere tools for the practical purpose at hand. So also certain articles of religious faith can be designed to serve the practical activities of the present age.

Now the man of insight, declares the pragmatist, would comprehend that a true (true means only practically useful) scientific law and a true religious belief or a true myth—all these stand on the same par and belong to the same species. Practical workability and utility is the sole criterion of truth. Neither scientific truths nor true religious beliefs are eternally or absolutely true: modern relativity physics has rendered the absolute scientific laws of the last century mere out-dated relative truths. 'All theories, whether of cience or art or faith, are mere hypotheses'. All truths are practical truths, practical instruments of life. Neither religious belief nor a scientific law has any content of absolute reality or any absolute validity: both are working hypotheses, true only if, and in so far as, they work in practical life to solve the practical problems of life. And they cease to have any value or truth when man discovers or develops relatively better methods and techniques, that is, instruments of relatively better practical efficiency. So what is to be done today is that religious beliefs and institutions must become uptodate to solve the problems of modern man with uptodate instruments.

The entire heritage of modern scientific culture, concludes the pragmatist, is the granary of instruments prepared by the species in the cosmic laboratory in the course of its organic evolution; and it is handed over to the present as the fruits of its infinite practical experiments and experiences. Verily, the modern scientific culture is the cream of the cosmic process and the crown of organic evolution. Now it is up to man to make use of this granary of instruments to manipulate and control the environment and solve practical needs and attain practical success. The strüggle of the species to control the environment to solve its practical needs has come to a glorious success. Today, man is the master of the objective nature; and there are enough instruments in the armoury of scientific culture to deal

with all practical problems of man. What is necessary is that man must use the instruments cleverly and efficiently; but forget not that intellect and thought, beliefs and morals, language and speech, dress and manners, arts and sciences, social organisations and political institutions—all these are instruments or weapons, in the hands of man, to be cleverly and efficiently utilized in the struggle for practical success. Such practical efficiency is true virtue; and the fruit of such practical virtue is practical success and irresistable growth", in which consists the real salvation of life. However, please to note that the real secret of practical success consists in one's capacity to manipulate the 'environment', that is, to manipulate, dominate and control the 'environment', not only the forces of nature but also social, economic and political forces of the environment. Practical success is certain for man, declares the pragmatist, if only man does not waste his energy in useless learning and in useless search after the 'absolute reality' of the world. Any such search after the so-called 'absolute reality' or 'substance' of the world is foolish for three reasons: First there is no such reality but only a process; second, even if there is a reality, man can never know it; and, finally, even if there is (obviously wrong suppositions) such a reality and even if man can know it, such knowledge has nothing to do with the practical life of man. For it is now amply demonstrated that organic life, mind, consciousness, morals, etc., arose in the world at a very late stage in the cosmic process. And before the origin of life, there was no mind or consciousness. So the question is about the inanimate substance of the cosmic process from which organic life and mind issued. Now what does it matter for human life, if man discovers the inanimate stuff if there is any such stuff, of the cosmic process. Whether the primordial matter is gold or charcoal or vinegar, so to say, or mere neutral energy or dialectical energy, it does not matter for the present practical life of man. However, the truth is that the basic reality of the world is not any absolute stuff but only the world-process. Therefore, waste not this sweet life in useless vain search after an imaginary 'absolute reality' or any 'absolute values'.

3. Pragmatism : 'The American Way of Life'

This is the spirit and purport of the pragmatist philosophy, with which John Dewey championed the technological (scientific) culture of the West and transformed it into a general philosophy of life. John Dewey broadcast his pragmatism to the whole world from his American base during the period 1900 to 1952. The West, especially the Americans, received the pragmatist philosophy with great enthusiams and as a great blessing. The reasons for the immediate popularity of pragmatist philosophy are to be searched in the intellectual context of the time: pragmatism emerged at a time when the Western mind had ceased to be influenced and inspired by the traditional Christian religion and the religious account of man and the universe; and still more important, pragmatism came when the Western mind realised the impotence of the logical method of the philosophers as well as of the scientific method of the scientists, to reveal the truth and meaning of human life and the cosmic process. The fall of the traditional religion followed by the patent failure of the philosophers and the scientists to reveal the essential reality of the world, created a crisis in the Western mind: indeed the crash of the scientific materialism was the crash of the last hope of the Western mind. It was in this helpless mood of scepticism and pessimism that the Western mind easily yielded to the charm of pragmatism. To the sceptical and pessimistic mind of the West, the appeal of pragmatism was irressistable; for pragmatism presented a practical philosophy of life with a bold declaration that there is no absolute truth or reality in this world, nor is there any need of any knowledge of absolute truths for human life. Naturally the West listened with rapt attention to the philisiphy which John Dewey and party prescribed to mankind, and especially to the Americans, as a sure panacea for all their problems of life. Of all the West, the Americans swallowed the pragmatist panacea supplied by their greatest philosopher: and the result is what is today called 'the American way of life.' But instead of solving problems, it has multiplied the problems of

the Americans. To get a mere glimpse of the terrible problems of the present Americans, it is worthwhile to read an authoritative medical report on America released at New York and republished in newspapers :"

> 'SICK AMERICA'
>
> New York, May 21 (Reuter).—The United States is "the most over-medicated, most over-innoculated country in the world", according to Dr. Herber Ratner, Professor of Preventive Medicine and Public Health at Loyola University Medical School, Chicago.
>
> Prof. Ratner gave this picture of the average American in an interview released here by the centre for the study of democratic institutions.
>
> "We are flabby, overweight, and have a lot of dental cavities..............our gastro-intestinal system operates like a spluttering gas engine, we can't sleep, we can't get going when we are awake.
>
> "We have neuroses ; we have high blood pressure. Neither our hearts nor our heads last as long as they should. Coronary disease at the peak of life has hit epidemic proportions. Suicide is one of the leading causes of death. We suffer from a plethora of diseases of civilisation".
>
> (From Indian Express, May 1962)

Occasional perversions are natural for human beings ; and such individual perversions are not of much consequences for the species. But when perversions are transformed into a rosy philosophy of life and practised as a national creed, nations perish and the species suffer.

4. MODERN AGE AND THE AGE OF PLATO

The pragmatist philosophy is not an isolated phenomenon. Most of the influential philosophies or 'isms' current in the West today are consaguine brothers born from the womb of the modern scientific materialism. To be sure, the prevailing philosophical spirit of the West is something ranging from

utter scepticism to outright materialism: pragmatism, logical positivism, neutral monism, dialectical materislism—all these 'isms' fall within the range, notwithstanding the misleading appearance of some of them. Perhaps what Plato said about the common belief of his age is true of the modern age of the west as well: the common opinion of his age, says Plato, is that the world and plants and all animals, etc., have all issued from "some spontaneous and unintelligent cause" (Sophist 265). And about the question of justice and morality and piety, the men of his age are confident, says Plato, "in nature these (justice, morality, etc.) have no existence or essence of their own—the truth is that which is agreed on at the time of the agreement, and as long as the agreement lasts; and this is the philosophy of many who do not altogether go along protagoras (the radical sophist)" Theaetetus—172).

Pragmatism is the prevalent spirit of Western culture today; and pragmatist philosophers claim that pragmatism is more uptodate with modern science than crude scientific materialism or subtle dialectical materialism. Of course, most of the 'isms' agree about the general evolutionary story of the origin of the world and of the species, whatever might be their difference about the primordial stuff of the world, whether they regard it as mechanical energy, or as dialectical energy or as neutral energy or as mere process.

The general spirit of pragmatism is to dismiss the question of the nature of the primordial stuff as an imaginary, irrelevant question. Nowithstanding this general stand, pragmatists like Peiree, James and Schiller are disposed to regard the primordial stuff of the world as a 'dynamic plastic stuff', a 'partially deadened mind'; and they explain that from this original 'plastic stuff', the world and the organic life evolved "through chance, continuity, habit and love". But John Dewey sticks to the basic concept of mere 'process' and presents a consistent theory of the evolution of the world and the species. Dewey's account of this evolutionary process as summarised in an article on Pragmatism (Philosophy, Eastern and Western, ed. by Radhakrishnan and others, Vol. II, p. 345) is quoted below:

"In common with James, Dewey urges against absolutism that reality is not a completed system, but is in a process of constant change, and that nature is fundamentally a process, a correlated series of events. In the passage of nature the events are ordered into definite well marked stages. At one stage in the history of our universe there were no living or conscious beings. Living beings appeared at a certain stage as a result of certain groupings of inanimate objects, and mind appeared on the scene when the living beings acquired a certain degree of organisation. Each of these stages is marked by the emergence of some genuine novelty, a real addition to the world, and cannot be conceived to have been implicit in the earlier stage from which it evolved. Living beings are "characterised by needs, by efforts which are active demands to satisfy needs, and by satisfactions", the terms need, effort, demand, satisfaction being interpreted in a purely biological sense. This type of activity does not characterise the physical events at the inorganic level, and life therefore introduces new mode of interaction of events into the natural order. The organic activity is characterised by selective and diccriminative responses which form the essence of sensitivity. This is the characteristic of behaviour in plants and lower animals".

Modern pragmatism is only a modern version of an ancient philosophy of life. This is fully acknowledged by F. C. S. Schiller (one of the three founders of modern Pragmatism) who declared himself as a disciple of the ancient Sophist, Protogoras*. The basic identity of modern pragmatism and the pragmatist philosophy of the ancient Sophists† is very striking. Both (ancient Sophists and modern Pragmatists) demonstrate, with a theory of knowledge, that knowledge of absolute reality of the universe is impossible for man ; and both assert that any such

*While the protogorean theory of relativity virtually denied the existence of any real being in the world, Gorgias openly declared, like Dewey, that there is no ultimate reality but only a Process.

†The import of the sophistic thought of ancient Greece has not been so far properly understood. In the main body of the present work the thought of the sophists is expounded in the correct perspective.

knowledge of absolute reality or values is not necessary for practical life of man. Both affirm that relative practical knowledge is the sole useful as well as possible knowledge for man; that practical workability is the sole criterion of truth; that true virtue is practical virtue (efficiency) and that the purpose of education is to impart practical virtue. Both believe that social and political and cultural institutions are mere conventions, having relative validity and instrumental utility; and that there are no universal truths either in politics or in morals or in religion. And both declare that since practical needs and practical environment determine what is good for man, there is no need of any knowledeg of absolute reality for the determination of what is truly good for man. Not only that. What is good for each man varies according to the time and environment; nay, what is true and good for each man is determined psycho-genetically by the biological urge for growth coupled with the practical pressure of the objective environment and by the treasure of practical experiences. And both the ancient Sophists and the modern Pragmatists are votaries of practical success; and both believe that practical success can be obtained only if man has practical virtue or efficiency to manipulate the environment. In this regard it is instructive to note that the ancient Pragmatists were professionally 'masters of rhetoric and teachers of virtue'. To obtain practical success one must have the capacity to control the environment. But the highest success is obtained by those who can manipulate and control the political environment and capture political power. The ancient Sophists, therefore, taught their students the highest virtue, political virtue, to capture political power, in the Greek democratic States, by effective public speaking; and the Sophists called this political efficiency to control political environment as political virtue. No wonder then that the ancient Pragmatists were 'masters of rhetoric and teachers of virtue'.

Now it must be clearly noted that the comparison between the ancient sophists and modern pragmatists is only confined to

fundamentals; for they differ about details. But whatever may be their differences about details, there is identity regarding the basic metaphysical and ethical assumptions and implications of their theories. And there is also a broad identity in the intellectual background of modern pragmatism and of the ancient pragmatism of the sophists: modern pragmatism came with the patent dissolution of modern scientific materialism, whereas ancient pragmatism of Protogoras came forward with a theory of knowledge designed to demolish the basic assumption of the prevalent atomic materialism of the age:—Protogoras belonged to the city of Abdera where the founder of Greek materialism, Leucippus, had established his materialist school. Protogoras was first a student in the atomistic school of Leucippus. But later Protogoras left the materialist school and dismissed atomic materialism, with his theory of knowledge, eptomised in the dictum: "man is the measure of all things"*. This dictum was primarily directed against the materialist philosophers who claimed that unlike colour and taste, etc., which are secondary qualities relative to man, the measurable quantitative determinations of things are the primary and absolute qualities of things. That is to say, the materialists claimed that the essential nature of reality is material, or quantitative aspect of things. Against this basic thesis of the materialists, Protogoras raised the counter-thesis that all qualities are relative secondary qualities derived by man; and that the measure of length and breadth of things are not the absolute qualities but are only the derivative, secondary qualities relative to man: "Man is the measure of all things". It was with such a declaration of the relativity of all sense experiences that Protogoras refuted the materialist school of his age. Now to come to the point: the prevalent spirit of the age of Plato was the spirit of materialism and Pragmatism just as the current spirit of the West is the spirit of materialism and pragmatism. Of course, the dominant spirit of the West

*This is a controversial point. The matter is discussed and substantiated in the main body of the present work.

today, as of the age of Plato, is the rising spirit of pragmatism. Plato had it in his view when he wrote his Dialogues to liquidate the prevalent pragmatism and materialism of his age.

There is thus a striking similarity in the intellectual temper of Plato's age and the twentieth century West. To get a general glimpse of the intellectual temper of Plato's age few passages of Plato from the Dialogue, Laws, are quoted below: Of course, most of the Dialogues mirror the general critical spirit of the age as well as Plato's creative spirit. However, these undergiven passages are specially chosen for the reason that the general theories of the age along with a hint of Plato's counter thesis, are given briefly and somewhat directly. A close reading of these passages would reveal a broad similarity with the modern materialists and pragmatists :—

"Quite true, Megillus and Cleinias, but I am afraid that we have unconsciously lighted on a strange doctrine. The Doctrine that all things come into existence, or have done or will do so, some by nature, some by art, and some by chance.

I will explain my meaning still more clearly. They say that fire and water, and earth and air, all exist by nature and chance, and none of them by art, and that as to the bodies which come next in order—earth, and sun, and moon, and stars—they have been created by means of these absolutely inanimate existences. The elements are severally moved by chance and some inherent force according to certain affinities among them—of hot with cold, or of dry with moist, or of soft with hard, and according to all the other accidental admixtures of opposites which have been formed by necessity. After this fashion and in this manner the whole heaven has been created, and all that is in the heaven, as well as animals and plants, and all the seasons come from these elements, not by the action of mind as they say or of any God, or from art, but as I was saying by nature and by chance only. Art sprang up afterwards and out of these, mortal and mortal by birth, and produced in play certain images and very partial imitations of the truth, having an affinity to one another, such as music and painting

create and their companion arts. And if there are other arts which achieve a serious purpose, these cooperate with nature, such for example, as medicine, and husbandry, and gymnastic. And they say that politics cooperates with nature, but very slightly, and has of more of art; and so that legislation is entirely a work of art, and is based on assumptions which are not true.

In the first place, my dear friend, these poople would say that the Gods exist not by nature, but by art, and by the laws of states which are different in different places, according to the agreement of those who make them; and that the honourable is one thing by nature and another thing by law, and that the principles of justice have no existence at all in nature, but that mankind are always disputing about them; and that the alterations which are made by art and by law have no basis in nature, but are of authority for the moment and at the time at which they are made..............

Well, then, tell me, Cleinias,—for I must ask you to be my partner—does not he who talks in this way conceive fire and water and air to be the first elements of all things? These he calls nature, and out of these he supposes the soul to be formed afterwards; and this is not a mere conjucture of ours about his meaning, but is what he really means.

Then, by Heaven, we have discovered the source of this vain opinion of all those physical investigators; and I would have you examine their arguments with the utmost care, for it will make no small difference if it can be shown that those who traffic in impious arguments, and lead others astray, use an argument which is highly logically weak from the start. And in my opinion this is so..............

Then I suppose that I must proceed with my unfamiliar argument. Those who manufacture the soul according to their own impious notions affirm that which is the first cause of the generation and destruction of all things, to be not first, but last, and that which is last to be first and hence they have fallen into error about the true nature of the Gods.

Nearly all of them, my friends, seem to be ignorant of the nature and power of the soul, especially in what relates to her origin : they do not know that is among the first of things, and before all bodies, and is the chief author of their changes and transpositions. And if this is true, and if the soul is older than the body, must not the things which are of the soul's kindred be of necessity prior to those which appertain to the body ?

Then thought and attention and mind and art and law will be prior to that which is hard and soft and heavy and light ; and the great and primordial works and actions will be works of art ; they will be the first and after them will come nature and works of nature, which however is a wrong term for men to apply to them ; these will follow, and will be under the Government of art and mind.

But why the word 'nature' wrong ?

Because those who use the term mean that nature is the first creative power ; but if the soul turn out to be the primordial element, and not fire or air, then in the truest sense and beyond other things the soul may be said to exist by nature ; and this would be true if you proved that the soul is older than the body but not otherwise" (Plato's Laws 888—892 Jwett Translation).

These passages of Plato mirror the materialistic and pragmatic spirit of his age. From the ethical and political point of view, the most obnoxious part of their doctrine, points out Plato, is that soul and mind, virtue and wisdom, beauty and goodness—these are all the accidental by-products, issuing from the cosmic process of a primordial cosmic stuff (which they call "nature") devoid of soul and life or any virtue and wisdom, or any beauty and goodness. Law and justice, self-control and morals—all these are the mere artificial conventions established by men for practical purposes and changing according to the changing needs and occasions : the primordial reality, or what they call "nature", is an inanimate stuff and has no moral nature or qualities ; and, therefore, all morals and laws are not by "nature" but are the artificial conventions of men, having

no absolute truth or validity. This is the essence of the issue of "nature versus convention" that agitated the age of Plato. Plato however points out that the basis of materialism and pragmatism would be killed and the whole picture would be reversed, if it is demonstrated that the primordial reality, that is, the original creative power or "nature" of the world is not fire or water but self, a universal self. If the primordial reality or "nature" is the universal self, and not fire or water or mere process, then it would become self-evident that virtue and wisdom, law and justice and morality are the essential, primary qualities of the primordial reality or "nature".* And then nobody can say that a life of justice and law, selfcontrol and courage, is an artificial life ; on the other hand, a life of morality justice, courage and self-control become the true and essential "nature" of man and law and justice and other moral virtues obtain an absolute basis in "nature" and attain an absolute validity. And egoism, and lust for pleasure would cease to be the true "nature" of man.

It is not possible in this introductory essay to touch the intricacies of the issues and the sweeping nature of Plato's solution to the problems. However, it may be barely stated, as a provisional basis, that the central thesis of Plato is that the primordial reality or "nature" (the Greeks used the term "nature" to signify the original creative power) of the universe is not air or fire or mere process ; on the other hand, the primordial reality or creative power of the cosmic process is the incorporeal, universal self.

A general background of the course of Greek thought would illustrate the intellectual context of Plato's thesis on

*It may be clearly noted that moral values of man are of obsolute and catagorical nature only because there is no-duality (A-dvaita) between the universal reality and the individual. If there were duality, all moral virtues or values would be nothing more than mere utilitarian conventions of relative value and pragmatic validity ; and it would not be possible for man to rise to the spiritual life of "Platonic Justice" or "Karma-Yoga". Plato or Sankara are well aware of this fact when they catagorically insist on the non-duality of the universal and the particular.

the Primordial "nature". The central problem of Greek-Philosophy, it is said, was the problem of the "one and the many". How the universe of many and infinitive varieties of things emerge from one uniform primordial stuff of the cosmos? The first batch of philosophers put the problem thus: "What is the original ground of things (primordial stuff) which outlasts all change and how does it change itself into these particular things or change these things back to itself?" To put the central issue in plain words: 'What is the original and immortal reality of this world process of change and becoming?' Successive philosophers gave different answers to this question: Thales, the first Greek philosopher, regarded the cosmic stuff as water; Anaximenes, as air; the materialists, as atoms; the pluralists, as diverse elements; the Eleatics, as a corporeal static world-Being; but Heracleitus denied the existence of a stuff and declared "process" as the basis of the universe. The endless search after the immortal stuff of this universe at last came to an abrupt crisis when Protogoras published his theory of knowledge, which demonstrated that human knowledge is strictly confined to the phenomenal behaviour of things, and therefore man can never know the absolute reality of the universe or of any thing. Naturally materialism, scepticism and pragmatism became the prevalent spirit of Greece, as the Greek mind was convinced of the impossibility of the knowledge of the 'primordial reality' of the universe. It was at this juncture of crisis Plato came forward with a new theory of knowledge, demonstrating the possibility of the knowledge of reality and of reality and of true moral virtue as against the 'relative practical knowledge and relative practical virtue' of the Sophists. And to the lingering question about the primordial and immortal stuff of this universe, Plato pronounced the answer that self is the sole immortal reality of this universe: that is, the universal soul is the primordial as well as the sole immortal reality or nature" (original creative power) of this universe.

The entire series of Plato's Dialogues are pervaded by

two basic doctrines which are complementary to each other: that the inner soul of man is eternal and immortal; and that the universal alone is real and the particular things attain reality only by the "participation" of the universal reality. The central implication of these two doctrines* (this matter is fully discussed and demonstrated in the main body of the present work) is that the universal self is the primordial creative power as well as the sole living reality of this world-process, and that there is no duality (A-dvaita) between the universal creative power (universal self) and the manifest individual things or the individual men. That is to say, there is no duality between the universal self and the inner self of individuals; and as there is no-duality between the universal reality and the inner-self of man, the self of man is essentially self-luminous with wisdom (knowledge of reality=self-knowledge) and virtue (creative power). If the self of man is self-luminous with knowledge of reality, then what is the cause of ignorance, what envelopes the inner light with darkness? The answer is, false knowledge envelopes the true knowledge innate in the self. If so, the path to knowledge of reality is to negate, as Plato's Socrates does, the false knowledge (enveloping the soul) by means of dialectic: that is, to speak strictly, to negate the false affections of the self (knowledge is a sort of affection on the soul) and bring to birth the innate, good affections of the self—that is, true knowledge and true virtue, both at once: "virtue is knowledge". Now to get a clue to the understanding of this thesis of Plato it is advisable to comprehend the logical context of Plato.

5. The Creative Spirit of Plato Versus Pragmatism

That the knowledge of the absolute reality of this universe is neither possible nor necessary for man is the basic stand point of pragmatism, modern and ancient. Knowledge is

*The prevalent scholarly interpretation of this doctrine of plato about the unreality of the individual or particular is that the individual dog., so to say, is not real but the universal dog or the idea of dog alone is real. Obviously this is a superficial interpretation.

impossible because neither scientific investigations nor logical thought can reveal any reality : scientific investigations of the objective environment can never furnish any knowledge of reality, because sense-experience (which is the sole source of knowledge of the external world) convey to man only the relative experiences of the conditional behaviour of objective environment ; and logical thought being a symbolic operation (not psychologically different from the psychological process of sense experiences), can lead only to symbolic knowledge referring ultimately to sense-experiences alone. From such negative basis, the pragmatists, modern and ancient, convey their positive message that the practical knowledge available to man is fully self-sufficient for all the practical purposes of human life. For practical knowledge can impart practical virtue to solve all practical problems and thus lead man to practical success and happiness. True virtue, categorically assert the pragmatists, is not the so called moral virtues of stupid old days, but practical virtue, the practical efficiency to do things ; and true wisdom is not any knowledge of the so called traditional absolute reality or truths, but the practical knowledge to manipulate and control the objective situation to satisfy one's needs and advance one's interests. The ancient Sophists, it may again be noted, were professional teachers of rhetoric and posed as the teacher of the highest practical virtue—that is, political virtue. Hence the report, that in Greece "men of science became teachers of virtue", with the advent of the Sophists.

To come to Plato's theory of knowledge. Now the discerning student can easily see that the only way to demolish pragmatism is to demonstrate and prove that knowledge of reality is possible for man*. But how ? Modern science has given a manifest demonstration that the secientific investigation

*In the theoretical plane, now materialism has ceased to be a force with 'the patent dissolution of scientific materialism'. Today, the primary enemies of true culture are the pragmatists and others like Logical Positivists who say that knowledge of absolute reality is not possible for man ; for the denial of the possibility of the knowledge of reality involves the affirmation that practical expediency is the sole guide and ideal of life.

of the external world can never lead to the knowledge of the essential nature of reality ; and this is confirmed by the pragmatist analysis of sense-experiences of environment. Thus man cannot obtain the knowledge of reality from the external world, through sense experiences. If man does not get the knowledge of reality through sense experiences, he can neither get it through logical thought, because logical thought is only a psychological process confined to the symbolic operation of sense-experiences. If sense experiences do not contain any knowledge of reality, no amount of symbolic operation can extract the knowledge of reality from sense experiences. Howsoever one may churn water, one cannot extract butter from it. Thus, neither the senses nor the faculty of logical thought can obtain the knowledge of reality from the external world and through sense-experiences: what is the alternative then ? If neither the senses nor the logical thought of man can obtain the knowledge of reality, then it seems that the search after reality is a vain and hopeless adventure. The knowledge of reality seems absolutely impossible and the pragmatist philosophy of life seems to be the sole alternative as well as a great blessing. But now Plato comes forward to enlighten mankind about the folly of searching everywhere in the world for the knowlede which is really within them.

Man can attain the knowledge of reality, declares Plato, because the self of man is self-luminous with the knowledge of reality. Nay, man himself is identical with that absolute reality. The primordial creative power of the universe is not air or fire or water or atoms but the universal self, which is the sole living reality of this universe. This universal self alone is real and the reality of all manifest things and appearances of this world issue from the creative immanence ("participation" As the translators put it) of this divine creative power*.

*In the Dialogue Sophist Plato has demonstrated the rationale of the entire cosmic process as manifesting from the primordial creative power, that is, the universal self. Although the osten-sible purpose of the Dialogue is to classify and locate the sophist and his art, the real purpose is to represent the whole world of phenomena, including shadows and illusive imitations of

Therefore, there is no-duality between the universal reality and the reality of apparently finite things. Essentially the inner self of man and the self of the universe are identical. Nay, they are one. And as there is no-duality between the universal reality and the inner self of man, the self of man is self-luminous with the knowledge of reality and self-animated with the primordial creative power. Indeed, self-knowledge is the knowledge of reality, and self-knowledge is the sure fountain of true virtue (All the Dialogues of Plato exhort men to search and attain self knowledge).

If the self of man is self-luminoús with wisdom (knowledge of reality) and virtue, then what renders a man ignorant and wicked ? The trouble with man is, points out Plato, not ignorance but 'false' pursuasion of knowledge', (Sophist 229-230 ; Apology 19—21). That is to say, the physical scientist who knows nothing of reality, thinks he has the knowledge of reality ; the historian or politician who knows nothing of true virtue or true reality, regards himself as a wise man. In fact, every man thinks himself wise and learned, although he has no real knowledge or wisdom. As long as this false notion of knowledge continues, the real self-knowledge will not issue forth. And as long as man segards these apparent qualities as real things, he will be at the command of senses and sense-objects. Thus, false knowledge is the root of sense attachment and lust and egoism. This false knowledge and the consequent false desires and ideals are what thwarts the true wisdom and virtue of the soul. In fact, these false knowledge and false ideals are only perverted psychological affections (which is termed by the Rishis of India as "Avidya"). And only when these false affections of the self are negated, the innate affections of the

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sophists, as manifesting from the universal Genus—the living cosmic self. Plato has also demonstrated the correct method of classifying and arranging the varieties of phenomena in species and the species under the universal Genus : the primordial creative power-Self ; The One in many and many in One (Sophist 264-268). Incidentally, it may be mentioned that the nucleus of the entire Dialogues of Plato (36 in number) consists of three Dialogues: Theaetetus ; Sophist ; and Statesman.

self—the real self-knowledge and true moral ideals—will issue forth. Therefore, what is necessary is to negate false notions of knowledge and wrong ideals of virtue by means of dialectic. Dialectic can only criticise, refute and negate false knowledge ; it does not and cannot create any new wisdom or true knowledge ; on the other hand, true knowledge only spontaneously issues forth in the soul, when the psychological perversions are negated by Dialectic. This is the essence of the socratic irony : Socrates only negates false knowledge and false notions of virtue. And this accounts for the negative conclusions in the first series of Dialogues dealing with the prevalent notions of virtue and the prevalent theories and conceptions of knowledge. Socrates claims to be an ignorant examiner of the views and opinions of others on virtue and knowledge : he is only a 'mid-wife' who can refute error and help the soul to "recollect" its own inner truth and innate moral ideals. In the Dialogue Theaetetus, Socrates after negating all the prevalent theories and conceptions of knowledge, concludes the discussion with an interesting speech : "Then supposing you should ever henceforth try to conceive afresh, Theaetetus, if you succeed, your embryo thoughts will be the better as a consequence of today's scrutiny ; and if you remain barren, you will be gentler and more agreeable to your companions, having the good sense not to fancy you know what you do not know. For that, and no more, is all that my art can effect ; nor have I any of that knowledge possessed by all the great and admirable men of our own day or of the past. But this mid-wife's art is a gift from heaven ; my mother had it for women, and I for young men of a generous spirit and for all in whom beauty dwells" (Theaetetus 210 C).

The role of the dialectic is to refute false notions of knowledge as well as false values of life ; the purpose of the refutation is to bring home the relative and superficial character of all the sense-knowledge* that man entertains as the true information

*In his famous letter to Dions friends, Plato explains (Epistle. VII-341-45) that knowledge of relaity comes as a flash "as it were a light from heaven", when a man of pure nature realises by logical scrutiny the relative and phenomena

about reality. And such a realisation has the effect of turning the vision of the soul back to the inner self from the unreal sense qualities of the objective phenomena. Such a transformation in the mind is essentially a moral transformation: the mind from its attachment to the sense-objects and sensual pleasures, is turned to the inner self and its innate moral ideals. Therefore, mere dialectic alone cannot effect the change; inner discipline is also necessary. It is instructive that in Plato's Republic the philosopher-king is a product of about 50 years of training and instruction. Only training in dialectic combined with a disciplined life can purge the self of its false desires and passions and regain its innate knowledge and moral ideals. Education is therefore a transformation of man from his perverted psychological affections back to the innate good affections of the self, to the innate self-disposition of Goodness: wisdom and virtue both at once. This innate good self-affections are alone the absolute ideas of the self: wisdom, justice, self-command and the like (Phaedrus 247-d.e.; Republic 511, Jowett. tr.). If self is the sole living reality, then the innate moral affections of the life Divine alone are the absolute ideas of the self; and to attain self-knowledge is, indeed, to be the Divine self itself with its innate vision of the 'Good' or the absolute moral law or ideal. Thus selfknowledge is both wisdom and virtue, the ultimate fountain of everything good.

The dialectic is to expose the relative and superficial character not only of sense knowledge but also of pure mathematics, the truths of which appear to be absolute truths. But mathematical sciences, says Plato, "only dream about being, but never can they behold the waking reality so long as they

nature of all sense perceptions, names, definitions and mental conceptions. For these can only convey "in word or concrete form" the relative, derivative qualities of things but not their essence. So, speech and writing can never convey the supreme "formless" reality. Hence Plato adopts the dialogue form, designed to self-educate the reader to the formless self-knowledge. It is obvious that to Plato mind and mental conceptions belong to phenomena, and therefore, the sharp division of mind and matter in Western thought is not platonic.

leave unmoved the hypotheses which they use, and are unable to give an account of them. For when a man knows not his own first principle, and when the conclusion and intermediate steps are also constructed out of he knows not what, how can he imagine that such a fabric of convention can ever become science?" It is noteworthy that Plato's criticism of mathematical truths is more modern than that of the most modern thinkers. Plato regards the mathematical systems as a 'fabric of convention dealing with the dream world of dead reality'. "Then", continues Plato, "dialectic and dialectic alone, goes directly to the first principle and is the only science which does away with hypotheses in order to make her ground secure; the eye of the soul which is really buried in an outlandish slough, is by her gentle aid lifted upwards; and in this she uses hand-maids and helpers, the sciences which we have been discussing" (Republic 533 Jowett tr.). What Plato says is that an initial mathematical training, etc., is helpful (as "hand maids and helpers") in the path towards self-knowledge. But self-knowledge alone is real knowledge, and all other sciences are only 'instruments', and do not deal with reality.

True education is only a process of self discipline and self-education to self-knowledge. And Plato's Dialogues are designed for the self-education of man to self-knowledge. True knowledge cannot be put into the soul of the student by the teacher or by the dialectic. What all can be done is to remove the clouds vitiating the inner light. Says Plato, "But then", "if I am right, certain professors of education must be wrong when they say that they can put a knowledge into the soul which was not there before, like sight into blind eyes.

Whereas our argument shows that the power and capacity of learning exists in the soul already: and that just as if it were not possible to turn the eye from darkness to light without the whole body, so too the instrument of knowledge can only by the movement of the whole soul be turned from the world of becoming to that of being, and learn by degrees to endure the sight of being, and of the brightest and best of being, or in other words, of the good.

And must there not be some art which will show how the conversion can be effected in the easiest and quickest manner; an art which will not implant the faculty of sight, for that exists already, but will set it straight when it has been turned in the wrong direction, and is looking away from the truth?" (Republic 518—Jowett tr.).

Self knowledge is the knowledge which unravels the riddle of the universe: it is the supreme knowledge which illumines the entire phenomenal knowledge of the universe. As the Upanisads of India put it: 'Self is the reality by knowing which everything else becomes known'. Only when the pragmatic knowledge of the phenomenal process of the world is illumined by self-knowledge, the phenomenal world becomes intelligible. As long as the knowledge of reality is lacking, all phenomenal knowledge is a baseless knowledge (In the Dialogue 'Sophist', Plato demonstrates this point and lays down the method. Sophist 265—268). And when the entire life pattern of a nation is established on the cultural basis of the integral self-knowledge coupled with the all-comprehensive knowledge of the phenomenal world, then the nation strikes deep roots and grows with vitality and vigour. And so also when the entire activities of a State-economic, political, scientific, artistic, etc., etc.,—are disciplined by this integral knowledge coupled with pragmatic knowledge (embodied in a philosopher-king), then the state as well as the citizen shall have health and vigour, peace and felicity (Epistle VII-326). In the Dialogue, Statesman, Plato gives a blue print of this cultural integration of pragmatic knowledge with selfknowledge, so necessary for the State and Government; and this blue-print is unfolded in the great Dialogues, Republic and Laws (The scholarly opinion that Plato wrote the Dialogue Statesman after writing the 'Republic', is based upon a misunderstanding about the basic technique of the scheme of the series of Dialogues).

Plato's Message to Mankind

The supreme message of Plato to the pragmatic spirit of the age is that knowledge of reality is possible and a life of

absolute cultural ideals is not only possible but also obligatory in the light of the knowledge of reality. For reality is not fire or atoms or mere process, but an all-pervasive living self. This living universal self has its own absolute divine law of life ; and since the inner self of man is identical with the universal self, man has to follow this divine law of virtue. For "I tell you that virtue is not given by money, but that from virtue comes money and every other good of man both public and private. This is my teaching..........." Apology. 30.b. Jowett tr.).

Self-knowledge is the knowledge at once of the supreme reality as well as of the ideal 'Goodness'. The universal self is not a static reality, but it is the living reality of the universe ; and the knowledge of the self is, therefore, the knowledge of a life Divine, at once real and ideal. "The Divine is beauty, wisdom, and goodness ; and the wing of the soul is nourished with good and grows apace ; but when fed upon evil and foulness and the opposite of good, wastes and falls away" (Phaedrus—246.e. Jowett tr.). To attain the knowledge of the Divine self is to become divine. And to become "divine means to become holy, just and wise. But, O my friend, you cannot easily convince mankind that they should pursue virtue and avoid vice, not merely in order that a man may seem good, which is the reason given by the world, and in my judgement is only a repetition of an old wife's fable. Whereas the truth is that God is never in any way unrighteous—he is perfect righteousness ; and he of us who is the most righteous is of all things most like him. Herein is seem the true cleverness of a man, and also his nothingness and want of manhood. For to know this is true wisdom and virtue, and ignorance of this is manifst folly and vice. All other kinds of what might seem wisdom or cleverness, such as the wisdom of politicians, or the wisdom of the arts, are coarse and vulgar" (Theaetetus 176.e. Jowett tr.).

Self-knowledge is not any intellectual knowledge but it is the realisation by the self of its own divinity ; and, therefore, to know one's own divinity is to be divine. "Virtue is self

knowledge", because to attain self-knowledge means to be divine : that is, to live the divine life of goodness. Wisdom or philosophy is, therefore, not the theoretical knowledge of anything but is a state of life : to live a life of spiritual or moral values : to live a life of wisdom, justice, fearlessness, and self-control and the like. To Plato thereis no duality between real and ideal, existence and law—both are one ; the life Divine (As the Rishis say, Brahman is Dharma). To quote a letter of Plato : "Plato to Aristodorus wishes well-Doing" "I hear that you now are and always have been one of Dion's intimate companions, since of all who pursue philosophy you exhibit the most philosophic disposition : for steadfastness, trustiness, and sincerity—these I affirm to be the genuine philosophy but as to all other forms of science and cleverness which tend in other directions. I shall, I believe, be giving them their right names if I dub them "parlous tricks".

So farewell, and continue in the same disposition in which you are continuing now" (Epistle X. 358. c. Bury. tr.).

In this letter as in all letters of Plato, he starts the letter with a wishing of well-doing. This wishing of 'well-doing' in every letter is only a symbolical expression of the essence of his philosophical message. To live a life of virtue, that is, virtuous living is real philosophy ; and virtuous living is 'doing well' or 'well-doing'. To Plato a virtuous life of justice, sincerity, steadfastness, self-control or self-command, and the like, is true self-knowledge or philosophy. Much load of learning stuffed in the heads of vain scholars is not philosophy. But to live a life true to the spiritual nature and moral law of self (of reality) is philosophy. The lives of the sages of India might illustrate the point better.

This is the central message of Plato to the pragmatists and the materialists of the age. And the message is true even today ; and it is also relevant to the pragmatic and materialistic spirit of the present age. In this hour of great crisis, the west will do well to learn the central law of life from Plato.

In the light of modern knowledge the world has only two alternatives : either to deny reality altogether and believe in a mere ultimate process and live a life of self-aggrandisement with the ideal of practical expediency—that is the path of pragmatism ; or to believe in the reality divinity and non-duality of self and live the creative life of righteousness—this is the path of Dharma preached by Plato's Dialogues* and the upanisads of ancient India.

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*The present work the 'Mind and Spirit of Plato's Dialogues' is conceived as complementary to the work, 'The Mind and Spirit of Bharat'. The basic identity in the thought of Plato and that of Bharat accounts for the similarity in the form of the titles.

Since the purpose of this introductory essay is to show the relevancy of Plato today, the discussion has been confined only to the basic spirit of Plato's thought, and not to its various technicalities.

THE VALIDITY OF COMPARATIVE CRITICISM

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The neo-Aristotelian school of criticism stresses the value of "inner verification" as against "outer verification" in literary criticism, but its contention that Aristotle applied no deductive knowledge or principles to poetry and "merely examined poems inductively as formal organizations unique in themselves has been demolished by, among others, John Crowe Ransom (in 'The Bases of Criticism' in *The Sawanee Review*, Autumn, 1944) and Kenneth Burke (in *The Problem of the Intrinsic*)"[1]. Comparative criticism is based on "outer verification". Dryden, for example, follows a comparative method in the *Essay of Dramatic Poesy*. He does it in the form of a colloquy in which there is a comparison of the Ancients and the Moderns. In the discussion that starts Neander (Dryden) attempts to estimate the genius of Shakespeare "who of all modern, and perhaps ancient poets, had the largest and most comprehensive soul"[2]. To the English people he will not allow a position of inferiority : "Be it spoken to the honour of the English, our nation can never want in any age such who are able to dispute the empire of wit with any people in the universe"[3]. Arnold defines criticism as "a disinterested endeavour to learn and propagate the best that is known and thought in the world," and insists that every critic should "possess one great literature, at least, besides his own"[4]. His well-known touchstone method has at its basis comparison between what is deemed best and what is tested on its norm. In his critical works Arnold makes comparison between poets and poems of divergent ages and different countries.

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[1] Stanley Edgar Hyman : *The Armed Vision* (New York), 1955, p. 12.

[2] E. D. Jones : *English Critical Essays* (The World's Classics), p. 149.

[3] Dryden : *An Essay of Dramatic Poesy* (Oxford), p. 77.

[4] Matthew Arnold : 'Function of Criticism at Present Time', *Essays in Criticism*, First Series, pp. 38-39.

Comparative criticism admits the value of tradition. Tradition is not mere dead convention, nor is it a mass of unconnected facts and incidents. It has a continuity, a growing process which passes from age to age, carrying with it the best elements of each age. Tradition logically leads to an awareness of permanent values in an author or a work of literature. Yet, there are those in our age who seek verification not without but within the poem itself. By means of analysis they trace the growth of ideas within the poem and try to correlate this development of idea with the structural growth of the poem. In short, criticism tends now to become more and more analytical and attention is concentrated primarily on the literary work itself, instead of juxtaposing it with other works for valuation and appreciation. Douglas Bush calls this type of criticism "analytical" or "aesthetic"[1].

It has to be granted that comparative criticism may easily become trivial or even puerile. But, at its best, it reveals the fundamental features of works of art, laying bare, at the same time, the essential unity of human thought and emotion.

We may proceed to understand the reasons that lie behind such agreements and disagreements and that might lead to the understanding of human nature itself.

The initial start in comparative criticism is the realisation of the *zeitgeist* or the time spirit of the comparable poets. Milton is a poet of the seventeenth century ; Eliot belongs to the twentieth. Just as Eliot's poetry reflects his own age, Milton's poetry also represents his time. In the seventeenth century a radically new era begins after the restoration of monarchy in 1660. Social manners and moral values undergo a complete change. Milton finds himself "fallen on evil days"[2]. But more fundamental than this personal disaster is the tension of

[1] 'Contemporary American Criticism', *The Literary Criterion*, winter 1962, Vol. V, No. 3, P. 164.

[2] *Paradise Lost*, VII, 24.

the age due to the impact of the new science on scholasticism[1]. In the twentieth century, the nihilism of the nineteenth century Europe, of writers such as Schopenhauer and Nietzsche, finds expression in Thomas Hardy and A. E. Housman. This spiritual crisis at the personal level in particular philosophers and poets enters into the consciousness of the age as a result of the impact of World War I. Both Milton and Eliot react sharply to the time spirit and uphold the traditional values of life in a hostile atmosphere. Both the poets are prophets of a troubled age, struggling with ultimate problems and arriving at metaphysical conclusions. The prophet has "a message evoked by the passionate contemplation of his people, or of mankind, when faced by some profoundly disturbing crisis in their history"[2]. "There are two aspects of prophetic imaginative predictions: denunciation and promise"[3]. "Sin, moral evil, as sources of all we suffer, righteousness and repentance as the promise of better things—these are the recurring themes of prophetic poetry."[4]. And these are the themes of *Paradise Lost* and *The Waste Land.*

With the restoration of Charles II and the return of his licentious courtiers, the "Philistines" triumph. Milton's hope for a Messianic Kingom in England comes to an end. England elects to be ruled by Satan. This contemporary situation is symbolised in the title of Milton's epic, *Paradise Lost.* The poem, in relation to its age, is "doctrinal and exemplary to a nation, "but it has also universal significance. Milton is reminded of the Fall of Man through sin. The theme of his epic is

> "Man's first disobedience, and the fruit
> Of that forbidden tree whose mortal taste

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[1] Basil Willey: *The Seventeenth Century Background*;
Chap. I. The Rejection of Scholasticism;
Chap. II. Bacon and the Rehabilitation of Nature;
Chap.III Sir Thomas Browne.

[2] Sir H. J. C. Grierson: *Milton and Wordsworth*, p. IX.

[3] *Ibid.*

[4] *Ibid.*

Brought death into the world, and all our woe,
With loss of Eden..............."[1]

Eve tempted by Satan and "Adam fondly overcome with female charm,"[2] eat the fruit of the forbidden Tree, the

"........sacred, wise, and wisdom-giving plant,
Mother of science"[3].

They repudiate God, the higher Reason, the eternal principle of moral life, and transfer their allegiance to Satan, the embodiment of Evil, and, consequently, they lose paradisal bliss. The promise of salvation is held out to them through repentance, restoration of faith, noble action, moral control and love[4].

The Waste Land is a terrible denunciation of the Godless, materialistic contemporary society. The title of the poem is suggested by Miss L. Weston's book, *From Ritual to Romance. The Waste Land* is the kingdom of the Fisher King of Medieval Grail legend, once throbbing with life, but turned waste on account of the moral weakness of some kinghts and ladies of his realm. The Fisher King also suffers from the disease of sterility. There is no cure for the ailing King and his drought-stricken land unless a knight of unshakable faith and spotless character, Sir Percival, risks an arduous journey to the Chapel Perilous and succeeds in finding out and questioning the Holy Grail, the vessel in which Jesus Christ had his Last Supper. In this way, the sterility caused by sin is cured by the help of a man whose moral life is unimpeachable and who is an example of renunciation and suffering for the good of others. Likewise, the modern world, of which *The Waste Land* is the symbol, is suffering from living death because of its moral and spiritual degeneration and there is no salvation for man unless he cherishes again the moral and spiritual values which he has lost.

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[1] *Paradise Lost*, I, 1-4.
[2] *Ibid.*, IX, 999.
[3] *Ibid.*, 679-680.
[4] *Ibid.*, XII, 581-587.

The eternal moral order has been the norm of conduct for a happy and peaceful life in the world. This moral order demands renunciation and self-sacrifice for the common good. The earliest known example of such self-abnegation is that of Ṛishi Dadhīchi mentioned in the *Ṛigveda*, the oldest scripture of the world. Dadhīchi gladly gives his life for forging, with his bones, the thunderbolt which is used by Indra, god of rain, for killing Vṛtra, the demon of drought. There is a reference to the Vṛtra-Indra myth of the *Ṛigveda* in *The Waste Land*:

> Ganga was sunken, and the limp leaves
> Waited for rain, while the black clouds
> Gathered far distant, over Himavant.
> The jungle crouched, humped in silence.
> Then spoke the thunder"[1].

In one of the *mantras* of the *Ṛigveda* it is said that unrivalled Indra, with the bones of Dadhīchi, killed ninety-nine Vṛtras[2].

A second *mantra* mentions that Indra upheld the earth and, by killing Vṛtra with the thunderbolt, released water in plenty[3].

A third *mantra* tells us that when there was no rain from the sky and the miraculous work of producing food by the earth was suspended, rain-giving Indra, lifted the flaming thunderbolt and extracted all the water from the black clouds[4].

A fourth *mantra* refers to Indra, who, having slain Ahi (Vṛtra, the Demon of drought), set free the Seven Rivers (the *Sapta Sindhu*, the Gaṅgā, etc.)[5].

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[1] 'What the Thunder Said', *The Waste Land*, 395-399.

[2] इन्द्रो दधीचो अस्थभिः वृत्राण्यप्रतिष्कुतः ।
जघान नवतीर्नव ।। ऋ० १ मण्डल ८४ सूक्त १३ मन्त्र ।

[3] स धारयत पृथ्वीं प्रपथच्च वज्रेण हत्वा निरपः ससर्ज ।
ऋ० १ मण्डल १०३ सूक्त २ मन्त्र ।

[4] न ये दिवः पृथिव्या अन्तमापुर्न मायाभिर्धनदा पर्यभूवन् ।
युजं वज्रं वृषभश्चक्र इन्द्रो निर्ज्योतिषा तमसो गा अदुक्षत् ।।
ऋ० १ मण्डल ३३ सूक्त १० मन्त्र ।

[5] यो हत्वा अहिमणिात् सप्त सिन्धून् ।
ऋ० २ मण्डल १२ सूक्त ३ मन्त्र ।

Now the lines quoted from *The Waste Land* may be interpreted thus :—

When the Gaṅgā was 'sunken', the black clouds 'gathered' in the distance over the Himalayas without sending down rain on the earth, the forest languished in drought and depressing silence, the rain god, Indra, with the thunderbolt forged from the bones of Dadhīchi, the Ṛishi, who gladly died for the good of the people, killed Vṛtra, the demon of drought, and set free the life-giving waters.

From the Vedic ages down to the later periods of human civilization, from time to time, whenever the life-giving waters of moral and spiritual values are dried up, the noblest souls among men have willingly sacrificed themselves for the peace and happiness of mankind. From the *Vedas* to the *Bible* the tradition has been preserved for the inspiration and guidance of humanity. But in modern times, as many times in the past when the moral and spiritual values were negatived, life is cut off from these roots and man cannot understand

> "What are the roots that clutch, what branches grow
> Out of this stony rubbish".[1]

The traditional values are ignored and modern civilization is doomed in consequence.

The modern man's fear of the life of faith and of renunciation and voluntary self-sacrifice which it entails as a necessary corollary, is symbolically expressed in the conversation of the protagonist of *The Waste Land* with Stetson :

> "That corpse you planted last year in your garden,
> Has it begun to sprout ? Will it bloom this year ?
> Or has the sudden forst disturbed its bed ?
> Oh keep the Dog far hence, that's friend to men,
> Or with his nails he'll dig it up again !"[2]

The protagonist meets Stetson, a figure in contemporary London, and enquires of him about the fate of the dead body that Stetson buried a year ago in his garden. He wants to

[1] 'The Burial of the Dead', *The Waste Land,* 19-20.
[2] *Ibid.*, 71-75.

know whether the corpse germinated or was blighted by frost. The protagonist advises Stetson not to allow the Dog who loves man to dig up the dead body with his nails again. The Dog here with a capital 'D' is not an ordinary dog but a symbol of divine aid to rebirth, suggesting god Anubis (an Egyptian deity represented with the head of a jackal by the Egyptians and by the Romans with that of a dog and mentioned by Milton as 'dog Anubis' in the *Ode on the Morning of Christ's Nativity*), the Dog Star, Sirius, and Jesus Christ. When Isis laments the death of her spouse, Osiris, who is slain by Set, the god of evil, Anubis, with the help of Isis and her sister, pieces together the mutilated corpse of the murdered god and it is restored to life.[1] The ancient Egyptians annually celebrated the death and resurrection of Osiris, the corn god. Every year when the Dog-Star appeared in the sky its rising was followed by floods in the Nile. To the Egyptians, the bright Dog Star, or Sirius, was the star of Isis, the goddess of life and love, who came to mourn the death of her spouse and wake him up to life. The priests of ancient Egypt, before the beginning of the sowing season, buried an effigy of Osiris, made of earth and corn and, when they unearthed it a few days later, they found that the grains had sprouted. They interpreted it as a hopeful sign of a good crop and believed that the god had produced the corn from himself. From "the death and resurrection of their great god the Egyptians drew not only their support and sustenance in this life, but also their hope of a life eternal beyond the grave."[2] The Dog is also God in Christ, the Hound in Francis Thompson's *Hound of Heaven*. Jesus Christ, out of infinite love for man, was nailed to death on the Cross, but He came back to life. By virtue of His self-sacrifice He has the power to dig up the dead from their graves and admit them to the life of salvation.

T. S. Eliot has a polarity of ideas: death and birth. One must die physically to be born in salvation. Death by

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[1] Frazer: *The Golden Bough* (Macmillan, Abridged ed., 1954), Chap. on Osiris.

[2] *Ibid.*, p. 376.

water is an important indication of this nexus which binds death with resurrection. Water is the original source of all life ; there is no water in *The Waste Land.*

When faith in God is lost all source of moral and spiritual life is cut off. Then man becomes a mere slave of passions, such as greed, anger and lust. Unfortunately, in *Paradise Lost* and *The Waste Land*, these three passions are predominant. Before these sins are known in Earthly Paradise, it is a seat of perfect bliss, but, after their intrusion into the Arcadian simplicity and innocence of the most sublime couple, the first parents of mankind, Eden, with its "sylvan scene,"[1] mentioned by Eliot in *The Waste Land,* is turned into a wilderness and the immediate impact of the sin of disobedience is a hell raging within the hearts of Adam and Eve : "in lust they burn."[2] Reason, the god-like principle, is no longer the monitor of their life. When Reason is imprisoned by passion there is moral chaos :

> "Reason in Man obscured, or not obeyed,
> Immediately inordinate desires
> And upstart passions catch the government
> From Reason, and to servitude reduce
> Man, till then free."[3]

These "upstart passions" in *Paradise Lost,* greed, cruelty and lust, are represented by Mammon, Moloch and Belial, the three rebel angel-chiefs who along with others fall with Satan, their rebel leader, into Hell and escaping therefrom, in later times, claim the worship of the sons and daughters of Adam and Eve. The gods who ask worship and receive it willingly from men and women in *The Waste Land* are the same false gods of *Paradise Lost :* Mammon, Moloch and Belial—greed, cruelty and lust—and the true gods and God are either unknown or deliberately neglected :

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[1] *Paradise Lost,* V, 140.
[2] *Ibid.*, II, 1015.
[3] *Ibid.*, XII, 86-90.

"Heartily know,
When half-gods go,
The gods arrive".[1]

The worship of false gods from Hell makes the modern world a hell.

In *Paradise Lost* Mammon is the god of greed:

"*Mammon*, the least erected spirit that fell
From Heaven; for even in Heaven his looks and thoughts
Were always downward bent, admiring more
The riches of Heaven's pavement, trodden gold,
Than aught divine or holy else enjoyed
In vision beatific. By him first
Men also, and by his suggestion taught,
Ransacked the centre, and with impious hands
Rifled the bowels of their mother earth
For treasure better hid."[2]

In *The Waste Land*, Mr. Eugenides, the Smyrna merchant, is the symbol of unholy greed. He is the faithful Mammon worshipper. As the looks of Mammon, even in Heaven, were always cast down towards gold, Mr. Eugenides has no other occupation but the greedy pursuit of gold through trade and commerce. He has no higher values in life except covetousness and his wealth is wasted in selfish, mean and soul-killing pursuit of sensual dissipation and perversion. His other eye, the spiritual vision, is blind:

"And here is the one-eyed merchant, and this card,
Which is blank, is something he carries on his back,
which I am forbidden to see."[3]

These are the words of Madame Sosostris, the fortune-teller and false horoscope reader, to the Protagonist of the poem. She, instead of reading the Tarot cards rightly as the

[1] Emerson: *Give All to Love, Poeams of Ralph Waldo Emerson* (Oxford University Press), 1947, p. 97.

[2] *Paradise Lost*, I, 679-688.

[3] 'The Burial of the Dead', *The Waste Land*, 52-54.

ancient soothsayers of Egypt used to do for divination, reveals Mr. Eugenides, the Mammon worshipper of the modern world. She cannot see Osiris, or Christ, represented symbolically by the card which to her is blank. Ironically, Madame Sosostris "Is known to be the wisest woman in Europe"[1]. She is the prophetess of modern civilization and is as blind spiritually as the one-eyed Mr. Eugenides.

Mr. Eugenides is the symbol of every man in the contemporary world :

"Unreal city
Under the brown fog of a winter noon
Mr. Eugenides, the Smyrna merchant
Unshaven, with a pocket full of currants
C.i.f. London : documents at sight,
Asked me in demotic French
To luncheon at the Cannon Hotel
Followed by a weekend at the Metropole".[2]

In this mad world of commerce there is no God but Mammon or gold. Here is a negation of all moral and spiritual values.

Cruelty in *Paradise Lost* is figured in the person of Moloch who claims the worship of false believers on earth, gladly receives the sacrifice of even innocent children while their helpless parents weep and cry outside the temple of Moloch and their loud cries of weeping are drowned in the loud beatings of drums. The god and his worshippers are pitiless :

"......*Moloch*, horrid king, besmeared with blood
of human sacrifice, and parents' tears ;
Though, for the noise of drums and timbrels loud,
Their children's cries unheard that passed through the fire
To his grim idol."[3]

Moloch is the god of anger, hatred and cruelty, the god of war, throwing a challenge to Heaven : "My sentence is for

[1] *Ibid.*, 45.
[2] 'The Fire Sermon', *The Waste Land*, 207-214.
[3] *Paradise Lost*, I, 392-396.

open war."[1] Milton considers war to be unholy as it is contrary to the wish of God. It is brutal and destructive, first started by Satan in Heaven against God and later popularised on earth after the Fall of Man. The poet finds concord in Heaven after the expulsion of the rebel angels and even the devils in Hell live in peace among themselves. It is human beings only who are fond of killing one another :

> "O shame to men ; Devil with devil damned
> Firm concord holds ; men only disagree
> Of creatures rational, though under hope
> Of heavenly grace, and, God proclaiming peace,
> Yet live in hatred, enmity, and strife
> Among themselves, and levy cruel wars,
> Wasting the earth, each other to destroy."[2]

God's holy plan is to create, not to destroy, because to "create" is "greater than to destroy."[3]

In *The Waste Land* of today, Moloch of war, within and without us, continues to rule, but his destructive powers have increased so much that he threatens to destroy modern civlilzation. The background of *The Waste Land* is the First World War and its aftermath in the post-war generation. The horrible picture of the devastating effects on the manners, morals and faith of western society is faithfully painted in *The Long Weekend*, a social history of the post-war period, from 1918-1938, by Robert Graves and Alan Hodge.[4] The typical representation of the destructive effects of the First World War in *The Waste Land* is Marie, the German princess, whom the war has torn from her native moorings and left her floating like a straw on the mad current of cosmopolitan society which is rootless like herself. She is lonely and bored, seeking solace in vain from books at night and from travels to the warm south in the cold season :

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[1] *Ibid.*, II, 51.

[2] *Ibid.*, 496-502.

[3] *Ibid*, VII, 606-607.

[4] Robert Graves and Alan Hodge : *The Long Week-End*, Chaps. 3, 7 and 12.

"I read, much of the night, and go south in the winter."[1] Like millions of young men and women who lost their parents in the First World War, Marie is orphaned, her family life is ruined and, in the absence of controlling hands, she is left a prey to a Godless society. Tiresias, the protagonist, the blind old prophet of antiquity, who gives unity to the poem, mentions Mylae, the scene of the victory of the Romans over the Carthaginians in the first Punic war, a commercial war like the First World War, implying that all wars are equally cruel and destructive. Eliot, like Milton who glances down to the cruel wars of the future when

> "To overcome in battle, and subdue
> Nations, and bring home spoils with infinite
> Manslaughter, shall be held the highest pitch
> Of human glory, and for glory done"[2]

has a prophet's vision of the future war that actually overran Eastern Europe in the Second World War:

> "What is that sound high in the air
> Murmur of maternal lamentation
> Who are those hooded hordes swarming
> Over endless plains,......"[3]

The third vice, figured in Belial "......than whom a spirit more lewd Fell not from Heaven, or more gross to love Vice for itself,"[4] in *Paradise Lost,* is lust. Belial rules often "in temples and at altars" when the priests become atheists, "in courts and palaces," and in luxurious cities like London:

> "......and when night
> Darkens the streets, then wander forth the sons
> Of Belial, flown with insolence and wine."[5]

There are not only the sons of Belial but his daughters too, who have no domestic virtue, but are—

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[1] 'The Burial of the Dead', *The Waste Land,* 18.
[2] *Paradise Lost,* XI, 691-694.
[3] 'What the Thunder said', *The Waste Land,* 366-369.
[4] *Paradise Lost,* I, 490-492.
[5] *Ibid,* 500-502.

"Bred only and completed to the taste
Of lustful appetence, to sing, to dance,
To dress, and troll the tongue, and roll the eye."[1]

Milton is the poet of wedded-love, "the true source of human offspring"[2] and the "Perpetual fountain of domestic sweets,"[3] Love for Milton is a power that raises a man to heavenly love :

"Love refines
The thoughts, and heart enlarges, hath his seat
In Reason, and is judicious, is the scale
By which to Heavenly Love thou may'st ascend."[4]

He denounces lust in strong language. Love is

"......not in the bought smile
Of harlots-loveless, joyless, undeared,
Casual fruition ; nor in court amours,
Mixed dance, or wanton mask, midnight ball,
Of Serenade, which the starved lover sings
To his proud fair, best quitted with disdain."[5]

In *The Waste Land*, there is no fidelity and felicity of wedded love. In *Paradise Lost* the best wedded-love is exemplified in the love of Adam and Eve before their fall ; but in *The Waste Land* of material civilization there is no such happy pair. The moral degradation is universal. By means of examples from high and low levels of society, best illustrated by the two scenes, one in the beginning of the second section, 'A Game of Chess,' of the neurotic lady of modern fashion and taste, and the other of the low class women talking about poor, miserable Lil and her disenchanted husband in a public house in London at the end, Eliot illustrates that love and marriage have failed in our urban civilization of which London is a typical example. For men and women of all classes and in all ages lust has been the

[1] *Ibid.*, XI, 618-620.
[2] *Ibid.*, IV, 748-749.
[3] *Ibid.*, IV, 760.
[4] *Ibid*, VIII, 589-592.
[5] *Ibid.*, IV, 665-670.

destroyer of domestic and social harmony. There are examples of Dido, Queen of Carthage, Isolde and Tristan and Antony and Cleopatra, in whom passion proves barren and ends in tragedy though there is, no doubt, intensity and fidelity in their destructive passion, and they die for it. Today there is no such thing. The modern male and female counterparts are the lover of the neurotic lady, Sweeney and the house agent's carbuncular clerk among men, and the neurotic lady, Mrs. Porter and her daughter and the typist girl among women. Examples of joyless, bestial lust are multiplied by other images, such as those of the three Thames daughters in the third section, 'The Fire Sermon', giving the impression that the entire modern society in the West is in the flames of a huge conflagration of lust and justifying the testimony of St. Augustine, the great spiritual teacher of the West and the Buddha, the great teacher of the East, that we are burning in the destructive fire of lust. The words of the Buddha to the Bikkhus are :

> "The eye, O Bikkhus, is burning : visible things are burning ;......
> With what fire is it burning ?
> I declare unto you that it is burning with the fire of lust."[1]

Such is the frightful picture of a Godless society which may grip one with a sense of despair. Of course, the modern civilization is doomed if man does not give up his allegiance to the Satanic powers, repent for his sins, desire a new life and work for it while still there is time.

Both Milton and Eliot, after giving a vision of the moral and spiritual degradation of man's life, show the way to his salvation. In *Paradise Lost*, God sends the Angel, Michael, to expel Adam and Eve from Eden. Michael meets Adam, takes him up to a hill, sets before him in a vision the future course of events, the incarnation, death, resurrection and ascension of the Son and the state of the church till His second coming.

[1] D.E.S. Maxwell : *Poetry of T.S. Eliot*, p. 111.

Adam is fully satisfied and says: "Henceforth to obey is best."[1] Michael calls it the sum of Wisdom and says to Adam:

"......Only add
Deeds to thy knowledge answerable; and faith;
Add virtue, patience, temperance; add love,
By name to come called Charity, the soul
Of all the rest: then will thou not be loth
To leave this Paradise, but shalt possess
A Paradise, within thee, happier far."[2]

Fortified with the message of the Angel, Adam and Eve go out of the Earthly Paradise, hand in hand, to fulfil their destiny. Eve had left the hand of Adam only once and she yielded to Satan's temptation and Adam too suffered. Now the two shall be faithful to God and to each other and thus they will face the wide world together:

"The world was all before them, where to choose
Their place of rest, and Providence their guide.
They, hand in hand, with wandering steps and solw,
Through Eden took their solitary way."[3]

Like Milton, Eliot too shows the way out of the Waste Land of modern civilization by insisting on man's obedience to the exhortation of Prajāpati, the Lord of creation, to his three sons: man, demon and god. The exhortation is given in *Bṛihadāraṇyaka Upanishad*. Prajāpati utters *Da Da Da* in reply to the request of His sons to Him for His final message, signifying *Datta* 'renounce and sacrifice' for man, *Dayādhvam* 'be merciful' for demon and *Damayat* 'exercise self-control' for god. The three eternal attributes mentioned here are the key to Paradise, to the bliss of the soul, here as well as hereafter, and their giving up the cause of degradation and descent into Hell. It will be pertinent here to observe that Lord Krishna in the *Gītā* warns Arjuna against lust, anger and greed as three gateways to Hell which destroy the peace and happiness of

[1] *Paradise Lost*, XII, 561.
[2] *Ibid.*, 581-587.
[3] *Ibid.*, 646-649.

the soul and, therefore, these three vices must be given up.[1] Against these three vices Eliot recommends the three corresponding virtues, renunciation, loving kindness and moral control which will bring rain into *The Waste Land* and give spiritual peace to man. The poem ends with the traditional benediction of the ancient Indian teacher to his disciples wishing them peace Eternal: *Śāntiḥ śāntiḥ śāntiḥ.*

The truth of Prajāpati's exhortation is eternal truth and it has been repeated again and again by prophets and prophet-poets of mankind so that man may not forget the way back to Eternal peace. Eliot refers to the Buddha who pointed out the way to *Nirvāṇa*, or Everlasting peace by the quenching of the fire of lust, to St. Augustine, and to Jesus Christ whose journey to Emmaus, after resurrection, is mentioned in the final section of the poem. Christ who is crucified and buried comes back to life, is always here for our salvation, though we do not see Him.

The true poet's struggle is to discover the eternal truth which

> "By strength and submission, has already been discovered
> Once or twice, or several times by men whom one cannot hope
> To emulate—but there is no competition—
> There is only the fight to recover what has been lost
> And found and lost again and again: and now under conditions
> That seem unpropitious.[2]

It may be pointed out here that there is considerable difference between Milton's attitude to other religions and Eliot's. Milton is intolerant of all religions other than his own Puritanism. He hates the gods and goddesses worshipped in ancient Syria and Egypt as false gods. Adonis, Osiris and

[1] त्रिविधं नरकस्येदं द्वारं नाशनमात्मनः ।
कामः क्रोधस्तथा लोभस्तस्मादेतत्त्रयं त्यजेत् ॥ *The Gītā, XVI. 21.*

[2] 'East Coker': *Four Quartets*, p. 22.

Isis, along with other heathen deities, are spoken of as the fallen angels who, with the sufferance of God, after Man's fall, disguise themselves in brutish forms and entice a large number of people to worship them and forget their real God. Eliot, on the contrary, respects all the religions of the world. This is evident from *The Waste Land* which embodies the ideas of a universal religion. For Eliot eternal truth is found equally in Hinduism and Buddhism, Paganism and Christianity. In the fundamentals of religion and morality "East is West and West is East." Although Milton mentions the "pillared shade"[1] of the Indian banyan tree in *Paradise Lost* he appears to be completely ignorant of the Indian religions and the Indian scriptures such as the *Vedas* and the *Upanishads*. That is why he may appear narrow minded today. In spite of this difference in their attitudes to other religions, both are useful for us today because their respective poems stress the necessity of absolute faith in Divine Power and of obeying Divine command for the salvation of man.

As regards technique, *Paradise Lost* and *The Waste Land* are entirely different. *Paradise Lost* is an epic on a large scale. The form of the poem is modelled on Virgil's *Aeneid*, but the subject is Biblical. It is an epic in twelve books. *The Waste Land* is also an epic but an epic of a new kind. It is very short, of 433 lines, and divided into five sections. Milton's method is the method of expansion ; Eliot's method is that of compression. *Paradise Lost* is a long narrative poem in which the story of the fall of man is told in a direct, lucid manner and there is logical development of thought. *The Waste Land* is, on the contrary, oblique, symbolistic and apparently illogical. The reason is that Eliot, abandoning the traditional manner followed by Milton, introduces a new method which helps him to give artistic form to the "immense panorama of futility and anarchy which is contemporary history."[2] The new method is the

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[1] *Paradise Lost*, IX, 1106.

[2] T. S. Eliot : Elliot's Review of J. Joyce's *Ulysses* in the *Dial*, Nov., 1925.

mythical method. "The mythical method is the presentation of experience in symbolic form."[1] Eliot, finding no clue to this new method in contemporary English poetry, or in the English poets of the last two centuries, turns to the later French symbolists, Laforgue and Corbiere, and the English Metaphysical poets of the seventeenth century. Both express their experi ences in methods having a great deal in common and both are innovators as they reintroduce the colloquial idiom into poetry. Eliot amalgamates the two schools. The symbolic method consists in discarding the usual narrative method and logical sequence of thought. It is a method of presenting material through symbolic images apparently unconnected with one another. All links in the chain are missing and to the casual reader the poem appears to be chaotic. Here, the reader, expecting a smooth progression of thought, is disappointed and bewildered. That is the reason why *The Waste Land* appears to be, "a set of separate poems."[2] But, as Eliot points out, there is nothing chaotic about the poem. There is in the poem the "logic of imagination" if "no logic of concept." If the reader reads the poem several times and allows the images "to cohabit" in his mind, they coalesce and produce a powerful effect.

Moreover, it is difficult to interpret the symbolical significance of the images in *The Waste Land.* An image may have several layers of meaning and the reader, unless he is aquainted with all the learned references, is likely to misinterpret the symbolical significance of the image. However, the basic symbols in *The Waste Land* are traditional and there is no insurmountable difficulty in comprehending their significance.

There is also a difference in the language of the two poems. *Paradise Lost* is an epic in which, for the most part, the scenes and characters are supernatural. Naturally the language used is elevated and remote from the language of common speech. But, when Milton comes to the conversation of Adam and Eve,

[1] Elizabeth Drew, *T. S. Eliot: The Design of his Poetry*, p. 21.
[2] Louis Untermeyer: *American Poetry since 1900.* Quoted by D.E.S. Maxwell in *Poetry of T.S. Eliot*, p. 98.

the language becomes simple, almost monosyllabic. This is how Eve speaks to Adam at the end :

"......But now lead on ;
In me is no delay ; with thee to go
Is to stay here ; without thee to stay
Is to go hence unwilling ; thou to me
Art all things under Heaven, all places thou,
Who for my wilful crime art banished hence."[1]

T.S. Eliot, on the other hand, mostly uses colloquial idiom, with a sprinkling of elevated diction wherever necessary. He is not always "unliterary". The spledid diction of the opening lines of the second section, 'A Game of Chess', the thundering words of Prajāpati and the concluding lines of the fifth secton, 'What the Thunder said', are not colloquial. Eliot, however, claims to make a perfect fusion of the old and the new :

"The word neither diffident nor ostentatious,
An easy commerce of the old and new,
The common word exact without vulgarity
The formal word precise but not pedantic
The complete consort dancing together."[2]

Both Milton and Eliot are difficult poets and they may not be popular. *Paradise Lost* and *The Waste Land*, however, will "fit audience find, though few."[3]

This analysis establishes the far-reaching effects of comparative criticism. Although, the *zeitgeist* is different, the two poets, notwithstanding their differences in theme and technique, have illuminating points of contact in both thought and style, which help in understanding the quality of 'universality' in literature and the value of 'tradition'. This, I submit, is the primary object of comparative criticism which establishes its validity on its own rights. It also helps in demarcating in the poetry of the two poets the areas where their differences dwell.

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[1] *Paradise Lost*, XII, 614-619.

[2] T.S. Eliot : 'Little Gidding', *Four Quartets*, pp. 42-43.

[3] *Paradise Lost*, VII, 31.

THE RELATION OF ELECTROMAGNETIC WAVES WITH THE BIOLOGICAL PROCESSES ON EARTH ACCORDING TO *CHARAKA SAṀHITA*

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Main source of incoming energy for our earth in the form of various types of radiations is sun[9]. Its influence on climate and meteorological state of the globe has not been yet sufficiently explored by the modern scientists[10]; but it produces a direct effect on the magnetism of the earth and on the upper layers of the atmosphere is well understood[10]. The founders of Indian medicine described the interrelation between sun's radiations and the biological processes on our planet, and also the way in which this knowledge could be utilised in the field of medicine. The following lines are English version of the views of *Punarvasu Ātreya* on the relation of electromagnetic waves (various types of rays) with the biological processes on earth.

Year can be divided into six seasons of two months each. Out of these six, three seasons from Jan. to June (both inclusive) represent sun's northern course during which sun's rays have a katabolic effect on the animal body; while the remaining three from July to December (both inclusive) represent sun's southern course and in this period the sun's rays are such that they promote the anabolic activities in the animal body. The two phases of sun are also known as the phase of *Ādāna* or absorption and the phase of *Visarga* or excretion respectively. Appreciation of the above *sūtra* is not difficult by a modern man. It seems that Charaka is here indicating the relation between various types of sun's rays and their effect on the animal body. Rays of shorter wave-length (ultraviolet etc.) reach the earth during first half of the year[8] due to relative nearness of the sun to this planet and these have a burning and katabolic effect on the bodies; while during the second half of the year the distance between sun and the earth is increased with a consequent increase of the atmosphere having a greater amount of water vapour

which the sun's rays have to traverse to reach the earth, in the course of which the infra-red rays are absorbed by the atmosphere and the rays which have a greater capacity of penetration through various gases, water vapour and dust of the atmosphere reach the earth. During the second phase of excretion the atmosphere is not very dry and the moon with unabated vigour fills, tones and nourishes the earth with its cool rays. Therefore, the period of excretion is also known as *saumya* (with the predominance of the qualities of *soma* or moon). Here the word *soma*, *saumya* and the cool rays of the moon are to be understood by the modern theory of fluorescence[8]. The cool rays of moon reach the earth also during the sun's phase of absorption, but their effect is in a way neutralised by the rays coming directly from the sun, hence the word *avyāhatabala* has been used as an adjective for *soma* or moon in the Sanskrit text[1].

The other phase of sun is predominantly *Āgneya* (pertaining to infra-red rays or heat). The word *Āgneya* conveys the characteristic quality which is antagonistic to aforesaid *saumya*[1].

The Determining Causes of Time, the six Potential (Rasas) Pathogens, and Physical Strength

The *arka* (sun) directed by time, *vāyu* (wind) by its inherent nature nnd *soma* (moon) moving in its orbit together act as the creative factors for diurnal variations, seasons, six groups of tastes (electrical potentials appreciated by the gustatory analysers), pathogens and physical strength. In the above *sūtra* it is to be remarked that time controls the sun (flares and other solar phenomenon which follow a certain periodicity)[10], inherent nature controls *vāyu* while the axial and orbital motion controls the effect of moon on the earth according to the views of Indian *Ṛishis*[2].

The Reason of Physical Weakness during Phase of Absorption

During this phase the sun disturbs the factor which determines cohesion in the world through its (high energy)

rays, and the speedy *vāyu* further dehydrates it. Thus the sun (rays) associated with *vāyu* produces progressive dryness during the three successive seasons—*śiśira*, *vasanta* and *grīshma* (the three seasons of the first half of the year), promotes the development of three dry *rasas* known as *tikta* (bitter), *kashāya* (astringent) and *kaṭu* (pungent) in substances and makes the human beings weak[3].

Reasons for Gain in Strength during the Phase of Excretion

During the seasons of rain, autumn and winter the earth is relatively away from the sun, the rays of which are brought to low energy-levels by time (taken to cross the intervening atmosphere), orbit (of the planets around it), clouds (dust and moisture), *vāyu* and rains ; at the same time the moon's rays are unobstructed in their function due to cooling of the (earth's) atmosphere, water and earth's surface—the substances which are hygroscopic in nature and are listed in the acidic, saltish and sweet *rasa*-groups flourish in the given order. During this phase the strength of men increases. The above facts may be put in a different way for the utility of medical science. Instead of grouping the substances, we should group the types of sensations or frequency of vibrations which they rouse in an intact human nervous system. Thus it becomes clear that various types of sensations experienced through our taste-nerve-endings can be put into two major groups which have an anabolic or katabolic effect on human metabolism[4].

The Efect of Atmospheric Temperature on Digestion

During winter the digestive fire becomes strong in already toned up (during the preceding rainy season) bodies of men due to its loss being obstructed by touch (on the skin) of cold atmospheric air. Here two facts are explained—one, that the blood is the carrier of fire or heat ; and the other, that due to cutaneous vasocontriction brought about by atmospheric cold, the digestive visceras receive greater supply of blood and the resultant better production of digestive enzymes by

which healthy men become capable of digesting food in greater amount and also such articles which are not easily digestible[5] (require greater amount of enzymes for their break down during the process of digestion).

The Relation of Cold with Tissue Metabolism

During winter season such stimulated fire (digestive and tissue enzymes), if do not get sufficient fuel (in the form of food), then it starts burning the tissue fluids (food reserves of the body such as glycogen, fat and proteins etc.) in the body; resulting in the provocation of *vāyu* which is cold in quality. The above statement indicates the relation between atmospheric temperature with the tissue metabolism, which also increases during winter. Thus according to Āyurveda atmospheric cold not only increases the digesting capacity of a person by increasing the production of digestive juices but also increases the tissue metabolism, which should be supplied with proper amount of food to avoid breakdown of body reserves of food and provocation of the *vāyu* activity in the body.

Therefore, during winter to avoid the above complications one should take such food as the soup prepared by cooking flesh of animals which are either aquatic or reside in damp places with addition of sufficient fats. The taste of such soups should be saltish and acidic.[7]

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A HUMANIST VIEW OF SELF AND ITS DESTINY

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The *Bṛhadāraṇyaka Upaniṣad* declares that the *Ātman* or Self alone is to be seen, heard about, reflected and meditated upon. The knowledge of the Self or *Ātman*, according to both the *Upaniṣads* and the classical Indian philosophers, constitutes not only the indispensable means to the attainment of the highest goal but the goal itself. This is expressed by saying that the end or object of man's life is self-realization. This realization is brought about mainly by the destruction of ignorance in regard to the real nature of the self. According to the Vedānta, e.g., the attainment of *mokṣa* is identical with self-knowledge ; and Śaṅkara avers that the person who has gained such knowledge should be looked upon as a liberated soul even when he is living in the embodied state (siddham jivato 'pi viduṣo' śariratvam—*Śārīraka Bhāṣya,* 1,1,4).

The above view of *mokṣa* or self-realization rests on the metaphysical assumption that perfection is inherent in the very constitution of the self. This assumption is shared by the Jainas, the Sāṅkhya-Yoga, the Nyāya-Vaiśeṣika, the Vedānta, and even by the Buddhists. Some of these systems, i.e. the Sānkhya-Yoga, the Nyāya-Vaiśeṣika and the Buddhists, conceive *mokṣa* or *nirvāṇa* negatively as consisting in the absence or negation of suffering ; others, e.g. the Jainas and the Vedāntists, identify it with the manifestation of the self's effulgent and blissful nature.

All these systems agree in one more respect : they all advocate withdrawal from the world of sensible objects and of action for the attainment of liberation. Our interest in this world, it is supposed, is due to *avidyā* or ignorance ; and freedom from worldly interests and attachments is considered to be the *sine qua non* of the self's salvation. The *Bhagavadgītā* indeed, prefers renunciation *in* action to the renunciation *of*

action, but even the *Gītā*, like the Vedānta in general, fails to establish an organic connection between the life in the world and the state of liberation. No wonder, then, that such interpreters of Indian culture as Albert Sweitzer should pronounce that culture to be life-negating. Interpretations of this sort, however, go astray on one point : they fail to see that the goal aimed at by the seeker of *mokṣa* is not so much the negation of life as the negation of suffering and the limitations which beget suffering. Nevertheless the fact remains that ancient Indian philosophers do not envisage any necessary connection between the state of perfection on the one hand and the activities of life directed towards the production of various earthly values on the other. As Prof. Hiriyanna has put it, the goal of Indian philosophy, i.e. of the philosopher-seeker after perfection, lies beyond logic and beyond ethics. At best, intellectual and ethical life constitute the indispensable ladder which enables the spiritual aspirant to ascend to the desired altitude of perfection, and which should be discarded after the ascent has been accomplished.

This view of life in the world, even of life devoted to the pursuit of the higher values, is, as we have already observed, a corollary of the metaphysical assumption that perfection is an inherent attribute of the self which, rather than be improved by participation in the historical life and experiences of mankind, is likely to be sullied and impaired by them. As a consequence, the sādhaka, if he desires to avoid these latter contingencies, should constantly be on his guard to remain un-attached to his experiences and actions, even as the lotus in pond remains untainted by the water that surrounds it.

The assumption in question, with the implied corollaries, is, in our view, flagrantly opposed to the testimony of man's value-intuitions. 'A man', it has been well said, 'is a Śūdra when born ; he attains the status of a Dvija through the *saṁskāras*'[1]. The human personality acquires worth through education, through the pursuit of the arts and the sciences,

[1] जन्मना जायते शूद्रः संस्काराद् द्विज उच्यते ।

through the exercise of virtue, etc. Wise people, according to a gnomic verse, 'spend their time in delightful occupation with literature and the works of thought[1]. We tend to extend our admiration not so much to the persons who perform their routine duties, as citizens and as members of this or that caste or this or that profession, but to those in whom the pursuit of one or other value attains heroic proportions. We admire Gandhi and Nehru, Kālidāsa and Shakespeare, Einstein and Tagore, not because they followed, faithfully and in a spirit of non-involvement, the codes laid down for their respective castes, etc., but because they applied themselves with vigour, and often with passion and perseverence, to the defence, establishment and/or creation of one or other value which has an abiding interest for mankind. Indeed, it is their passionate involvement in the activities productive of certain values that entitles them to be called great or heroic personalities. A similar involvement in respect of philosophical truth and its expression renders heroic the personality of a Śaṅkara, a Kant, or a Wittgenstein. In the spheres of art and thought, the creative personalities, in addition to cultivating a passionate concern for beauty, truth, etc., have also to undergo prolonged training and arduous discipline for achieving mastery over the aesthetic and logical media employed by them in their respective creations. The metaphysical assumption mentioned above fails completely to offer a plausible account of the need and value of heroic life, and of the need and value of the passion, perseverence and discipline that enter into the fashioning and growth of that life. Its attitude towards life involved in action, even to life devoted to art and thought and to the service of man, is more or less apologetic. For the fulfilment of his highest spiritual aspirations, the wise sage, as viewed by the classical systems of Indian philosophy, has no real need to move and act in the world of men and women, though he may, out of compassion and condescension, agree for sometime to associate himself with them. The men and women of the world,

[1] काव्यशास्त्रविनोदेन कालो गच्छति धीमताम् ।

indeed, may secure great benefits from their commerce with the sage, but the latter stands hardly to gain anything from his contact with the former.

II

The classical view of the self and its destiny has succeeded in discovering one most important condition of the growth and fulfilment of the human personality, i.e. the need on its part of cultivating progressive detachment towards the vicissitudes of its bio-social existence or its career in space-time. Abandoning attachment to that which is destined inevitably to perish and disappear, the wise individual should occupy himself solely with the pursuit of the spiritual values. A measure of such detachment is a necessary pre-condition of all types of higher spiritual activity; the artist, no less than the physicist or the mathematician, needs detachment towards his purely personal affairs if he is to make outstanding contributions in his field. Detachment towards personal gains and losses is still more characteristic of the lives of moral and religious heroes. The attitude of *anāsakti* or non-attachment, by promoting greater absorption in work and great objectivity in regard to the expected results, contributes to the efficiency of the spiritual life or activity; it also contributes to the peace and tranquillity of the actor's mind. The *Bhagavadgītā* expresses this truth when it characterizes *yoga* as "skill in the performance of actions" (*karmasu kauśalam*).

The mistake of the classical Indian philosophers, particularly the Sāṅkhya and the Vedānta, lies in their identification of the ultimate goal with this principle of non-attachment. The Vedāntic description of the *Ātman* as pure *cit* or awareness, as *sākṣin* or witness self, implies an apotheosis of the ideal of *anāsakti*. Transforming non-attachment into the principle of indifference, the Vedānta of Śaṅkara raises it to the status of a metaphysical entity. That which was regarded by the *Gītā* as a *condition* and *accompaniment* of skilled or efficient action, is considered by later Vedānta to be a self-sufficient ideal, divorced from all significant action and experience.

III

Detachment towards the personal and the ephemeral and consequent freedom from worry, disappointment and suffering are laudable ends or achievements, but they do not constitute the perfection or fulfilment of the human personality. The practice of non-attachment tends to ennoble a person by fostering in him the attitude of selflessness ; it also tends to endow his personality with sweetness and grace, by keeping him away from aggressive harshness and enervating despondency born of frustration and disappointment. However, detachment of itself cannot bring about expansion and enrichment of the human psyche. Such expansion and enrichment of the individual psyche can be ensured only by his participation in the historical activity and experience of his kind, particularly the activity and experience relating to the production and enjoyment of different kinds of values. It is through such activity and experience, pursued with different degrees of intensity and success, that the individual enters into meaningful relationship with significant sectors of reality, physical and spiritual, static and dynamic, timeless and historical. Such relationship with the universe apprehended as meaningful, and contemplated in a spirit of joy unsullied by utilitarian considerations, is characteristic of Divinity as conceived in advanced theistic systems ; that relationship constitutes the goal and destiny of the human individual, endowed with wondering sensitivity to the panorama of facts and values.

This does not imply that the individual richly equipped with significant awareness is insensitive either to the sufferings of his fellow-beings or to the limitations of man's career in the universe. True wisdom, either philosophic or religious, does not consist in superficial or dogmatic optimism, such as is advocated by certain brands of idealism. The man of highest culture, even of religious culture, while he is likely to be free from worries of a strictly personal kind, need not be lacking either in the sense of the tragic in human affairs, or in the

capacity to extend sympathy and succor to the afflicted, the humiliated and the wronged.

The emphasis on action, on participation in the processes that make up man's historical life, is clearly contained in the *Bhagavadgītā*. According to it, the Lord himself becomes incarnate as man with the purpose of establishing or defending the order of moral values in the world. If the importance of these and other human values is not sufficiently stressed in the *Gītā* it is due partly to the weight of the tradition which conceived *mokṣa* as freedom from actions and their fruits and which the author of the *Gītā*, despite his decided bias in favour of the life of meaningful action, found it difficult to combat and to discard. Nevertheless neither the words nor the doings of lord Kṛṣṇa as depicted in the *Mahābhārata* have the least tendency to show that he either belittled or was indifferent to the values of the human world. On the contrary, he clearly recommends, and even enjoins, the pursuit of those values when, following the idiom of his time, he declares that action involved in the performance of the *yajñas* and the practice of charity, etc. should not be abandoned (*na tyajyaṁ kāryameva*), for actions of that type tend to purify the wise actors. Going farther than even the *Bhagavadgītā* Nāgārajuna boldly declares that the *saṁsāra* and the *nirvāṇa* are one and the same, there being not even a minute difference between the two.[1] The implication is that the state of *nirvāṇa* consists, not in the negation or repudiation of the world, but in the attitude of wise detachment with which the world-experience is cherished. Modifying this ancient ideal with a slight variation in emphasis we would like to affirm that the ideal individual who is one combines rich sensibility and purposeful effort with detachment or limited concern towards that which concerns merely his bio-social existence or spatio-temporal life.

Man's awareness of significant reality gradually develops and accumulates in his spiritual history; it is stored up by him

[1] न संसारस्य निर्वाणात् किंचिदस्ति विशेषणम् ।
न तयोरन्तरं किंचित् सुसूक्ष्ममपि विद्यते ।।

in symbolic records of various kinds. These records embody perceptions of truth and beauty on the one hand, and the memories of virtuous and heroic deeds on the other. The significant areas and aspects of reality are partly revealed and partly created by man's varied creative activity, physical and spiritual, cognitive, aesthetic and volitional. The acts of contemplation which make up his awareness are also in a state of continual shift and modulation ; they are being constantly organised, grouped and regrouped, in qualitatively different orders or patterns of concepts, following different kinds of principles of relevance and consistency, connection and implication, negation and contradiction.

IV

We may now attempt a definition of the self which is worth knowing, and which may be fitly described as the object of philosophical knowledge. The self whose nature philosophy attempts to understand is not a static being subsisting or existing since eternity in a state of changeless perfection ; on the contrary, it is a growing and developing entity, conterminous with the significant or value-bearing consciousness of man at a particular point in his spiritual history. This self consists of the universally sharable consciousness of impersonally significant reality. Such consciousness is continually taking ever richer and newer forms in the formulated discoveries and principles of the sciences, in the exquisite creations of master artists and poets, critics and philosophers, and in the deeds of the saints and heroes symbolising the greatness and nobility of the human spirit. These varied forms of significant awareness or value, ever growing in richness and complexity, constitute the ever expanding impersonal, cultural self of humanity, which is the proper object of philosophical investigation and knowledge. Philosophy, as we have observed elsewhere, is an attempt to analyse, interpret and evaluate the value-bearing forms of man's consciousness and behaviour, insofar as those forms are universally visible. Philosophy does not study everything that constitutes mine or your self ; it studies only those aspects

of my self, i.e., my behaviour and consciousness, which have value or significance for the whole of mankind. Such values expressing his self are embodied by man in his artistic and reflective works, in his virtuous deeds, and in the disposition of saintliness and holiness which soothes and fascinates all who came in contact with him.

Philosophy, then, is the study of values. However, it does not study the utilitarian values, i.e., the values that count for us only as means. Philosophy studies what may be called the ultimate values, which are realized and reflected in the life and personality of man. By reflective analysis and interpretation of values philosophy renders articulate the processes of the creation and enjoyment of those values. The activity of philosophical reflection is essentially critical; it bears to values in general the same relationship as criticism does to art. Thus understood philosophy will appear to be an activity which contributes to the refinement of man's taste or his sense of values and the qualitative growth of the human spirit. In the important sense explained here, philosophy may fitly be described as self-knowledge; it is also the highest, the most interesting and illuminating kind of knowledge that the human beings can aspire to attain.

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INCONSISTENCIES IN NAMING PATTERNS IN THE BHAGAVADGITA

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The naming patterns in the *Bhagavadgītā* are almost completely consistent. That is, when a name has been assigned to Arjuna it is thereafter used to name Arjuna alone, and when a name has been assigned to Kṛishṇa it is thereafter used to name Kṛishṇa alone. Two exceptions, both involving the name *Mahābāho,* Mighty-Armed, occur in Chapter VI, Sloka 38, and Chapter XVIII, Sloka 1, where Kṛishṇa is referred to, apparently, by a name assigned first to Arjuna and used to name him nine times. These two exceptions give rise to certain questions.

Is there any need, in the first place, for refraining from assigning the same title of praise to both Kṛishṇa and Arjuna, apart from the convenience of avoiding confusion ? One may speculate, "Yes" : Kṛishṇa as God and Arjuna as man are different, and so they should be addressed by different titles. Yet one may also have speculative reasons for saying 'No' : Kṛishṇa, like Christ after him, was regarded both as God and man. Hence, in so far as Kṛishṇa is also man, the same name may properly apply to both Kṛishṇa as man and to Arjuna. This line of thinking does not settle the question, but merely deepens it.

Does the relative uniformity of naming practice in the *Gītā* constitute a kind of fact which has implications for a doctrine about differences which the author of the Gītā had regarding the natures of Kṛishṇa and Arjuna ? That is, do the two collections of descriptive titles together have typical differences which have significance regarding their natures ? This question points the earlier question in a specific direction which, if pursued, may answer it.

Regarding the two exceptions, same reason for them seems to be called for. Is there some common mistranslation involved, such that *mahābāho* does not in fact apply to Kṛishṇa, as it seems to from the contexts, but has reference to a third person (which seems unlikely, since this has never happened otherwise in the conversations between the two) or to something else ? Has there been some historical miscopying of these two terms ? Did the author somehow require this particular form for poetic convenience ? Did the author, with such a remarkable record of consistency, become careless on these two occasions ?

When we review the multiplicity of names assigned to Kṛishṇa and Arjuna and the number of applications of each, we can only marvel both at the consistency and become increasingly curious and troubled about the two exceptions.

Names applied to Kṛishṇa along with the chapters (Roman numerals) and ślokas (Arabic numerals) in which they occur are :

Achyuta, Changeless one, I 21, XI 42, XVIII 73.
Ādideva. Primal Power, XI 38
Anantarupa, Endless form (Infinite Presence), XI 38
Aprameya, Immeasurable One, XI 42
Apratimaprabhāva, Matchless Producer, XI 43
Arisūdana, Destroyer of Enemies, II 4
Bhagavān, Lord, X 14, X 17
Brahman, Ultimate Reality, XI 37
Deveśa, God of Gods, XI 25
Govinda, Restorer of the Earth, I 32, II 9
Jagannivāsa, Home of the Universe, XI 26
Hari, Multi-Functioning God, including God of Destruction, XI 9, XVIII 77
Hṛiṣhīkeśa, Master of the Sense, I 15, 21, 24, II 9, 10, XI 36, XVIII 1
Janārdana, Destroyer of the World, I 36, 44, III 1, X 18, XI 51
Kamalapattrākṣa, Lotus-leaf Eyed, XI 2.

Keśava, Luxuriant One, I 31, II 54, III 1, X 14, XI 35, XII 10, XVIII 76

Keśinīshūdana, Slayer of Keśin, XVIII 1.

Mādhava, Husband of the Goddess of Wealth, I 14, 37

Madhusūdana, Slayer of Madhu, I 36, II 1, 4, VI 33, VIII 2.

Mahābāho, Mighty-Armed, VI 38, XVIII 1.

Mahātma, Great Soul, XI 20, 37 50

Parameśvara, Highest God, XI 3

Prabho, Lord, XIV 21.

Purushapurāṇa, Sourceless (Ancient) Spirit, XI 38

Purushottama, Supreme Person, VIII 1, XI 3

Śrībhagavān, The Worthy Lord, II 2, 11, 55, III 3, 37, IV 1, 5, V 2, VI 1, 35, 40, VII 1, VIII 3, IX 1, X 1, 19, XI 5, 32, 47, 52, XII 2, XIII 1, XIV 1, 22, XV 1, XVI 1, XVII 2, XVIII 2.

Vāsudeva, Omnipresent One, VII 18, XI 50, XVIII 74.

Vārshṇeya, Descendant of Vṛishṇi, I 41, III 36.

Vishṇu, XI 30 (See also X 20).

Yogeśvara, Perfect God, XI 4.

Yogin, Yogin, X 17.

Names applied to Arjuna, with chapters and ślokas in which they occur, are :

Anagha, Happy One (without an ache), XIV 6, XV 20.

Bhārata, Descendant of Bhārata, II 14, 18, 28, 30, III 25, IV 7, 42, VII 27, XI 6, XIII 2, 26, 33, XIV 3, 8, 9, 10, XV 19, 20, XVI 3, XVII 3, XVIII 62.

Bharatarshabha, Best of the Bharatas, III 41, VII 16, VIII 23, XIV 12, XVII 12, XVIII 36.

Bharatasattama, Highest of the Bharatas, XVIII 4.

Dehabhṛitāṁvara, Best of Embodied Ones, VIII 4.

Dhanañjaya, Winner of Wealth, I 15, II 48, 49, IV 41, VII 7, IX 9, XI 14, XII 9, XVIII 29, 72

Guḍākeśa, Destroyer of Foes, I 24, II 9, X 20, XI 7,

Kaunteya, Son of Kuntī, I 27, II 14, 37, 60, III 9, 39, V 22, VI 35, VII 8, VIII 6, 16, IX 7, 10, 23, 27, 31, XIII 1, 31, XIV 7, XVI 20, 22, XVIII 50, 60.

Kirīṭa, Crowned One, XI 36

Kurunandana, Son of the Kurus, II 41, VI 43, XIV 13

Kurupravīra, Hero of the Kurus, XI 48.

Kurusattama, Highest of the Kurus, IV 31.

Kuruśreshṭha. Best of the Kurus, X 19

Mahābāho, Mighty-Armed, II 68, III 28, 43, V 3, 6, VI 35, VII 5, X 1, XIII 5, XVIII 13.

Paraṁtapa, Harasser of Foes, II 3, IV 2, 5, 33, VII 27, IX 3, X 40, XI 54, XVIII 41.

Pāṇḍava, Son of Pāṇḍu, I 14, 20, IV 35, VI 2, XI 13, 55, XIV 22 XVI 5.

Pārtha, Son of Pṛithu, I 25, II 3, 21, 32, 39, 42, 55, 72, III 16, 22, 23, IV 11, 33, VI 40, VII 1, 10, VIII 8, 14, 19, 22, 27, IX 12, 32, X 24, XI 5, 9, XII 7, XVI 4, 6, XVII 26, 28, XVIII 6, 30, 31, 32, 33, 34, 35, 72, 75.

Purusharshabha, Best of Persons, II 15.

Purushavyāghra, Personified Tiger, XVIII 4.

Savyasācin, Left-Handed One, XI 33.

The present study is limited to naming practices within the *Gītā* Pursuit of the same kind of study throughout the *Mahābhārata* should yield additional evidence and further useful cluesin answering the questions posed here.

मनमानी हिन्दी

डॉ० ब्रजमोहन
प्राचार्य, सेण्ट्रल हिन्दू कॉलिज

आजकल हिन्दी के क्षेत्र में बड़ी अराजकता फैली हुई है। हिन्दी 'लेखक' नागरी अक्षरों में जो चाहे सो लिख मारते हैं और समझ लेते हैं कि उन्होंने 'हिन्दी' लिखी है। यह हम मानते हैं कि भाषा की भी प्रकृति बदलती रहती है और प्रत्येक सजीव भाषा के प्रयोगों और मुहावरों में परिवर्तन होना ही चाहिए। किन्तु उक्त परिवर्तन की भी मर्यादा हुआ करती है। ऐसा नहीं होता कि हम जो चाहें सो लिख दें और समझ लें कि हमने अपनी भाषा की प्रकृति बदल दी है।

अँग्रेजी की प्रकृति हमारे देखते-देखते बदल गई और दिन-रात बदलती जा रही है। अँग्रेजी शब्द कॉलोनी का अर्थ किसी दिन केवल 'नई वस्ती' था, किन्तु आज वही शब्द एक विशेष प्रकार की शासन व्यवस्था का द्योतक है। आज से बीस-पच्चीस वर्ष पहले कोई अँग्रेजी लेखक इन्फिनिटिव के टुकड़े नहीं कर सकता था किन्तु आज लोग धड़ल्ले से इस प्रकार के पद प्रयुक्त कर रहे हैं :

to kindly go, to kindly see

और अँग्रेजी के विद्वान् इन प्रयोगों को सहन कर रहे हैं। इसके अतिरिक्त सकर्मक क्रियायें अकर्मक बनती जा रही हैं, अँग्रेजी में नये शब्दों की भरमार होती जा रही है और नये मुहावरे भी दृष्टिगोचर हो रहे हैं। फिर भी इन समस्त परिवर्तनों की एक सीमा है। यदि कोई हिन्दी पद 'चार-चार आने' का अँग्रेजी अनुवाद 'Four-four annas each' करे तो अँग्रेज़ी के विद्वान् इसे कदाचित अंगीकार नहीं करेंगे। इसी प्रकार हम हिन्दी में तो कहते हैं कि—

'वह उल्टे पैरों लौट आया'

किन्तु क्या अँग्रेज़ी में भी कह सकेंगे कि--

'He returned with back feet.'

कहने का तात्पर्य यह है कि किसी भाषा में वही नये प्रयोग खप सकते हैं जो भाषा की प्रकृति के सर्वथा प्रतिकूल न बैठें। हम यह मानते हैं कि जो बात आज किसी भाषा की प्रकृति के प्रतिकूल बैठ रही है, वही कल अनुकूल बैठ सकती है; किन्तु प्रश्न यह है कि भाषा की जो प्रकृति हमें आज दिखाई पड़ती है, कोई नया प्रयोग उसके अनुकूल बैठ रहा है या नहीं। आइये, इसी कसौटी पर हम वर्तमान 'हिन्दी' को कस कर देखें। हम यहाँ इस प्रकार की 'हिन्दी' के कुछ नमूने देते हैं :

(१) अंग्रेज़ी में एक प्रकार के आज्ञा-पत्र के अन्त में लिखा रहता है :

By order,
Governor

कुछ हिन्दी लेखक इसका हिन्दी अनुवाद इस प्रकार करते हैं :

आज्ञा से,
राज्यपाल

यह अनुवाद बिल्कुल ग़लत है। पहली बात यह है कि हिन्दी की प्रकृति के अनुसार उक्त पद आज्ञा के आरम्भ में होना चाहिए, न कि अन्त में। दूसरी बात यह है कि हिन्दी में उक्त पद का यह रूप होना चाहिए :

राज्यपाल
की आज्ञा से।

(२) बहुत से हिन्दी लेखक पहले अँग्रेज़ी में सोचते हैं, फिर उसका हिन्दी अनुवाद करके रख देते हैं। यह नहीं सोचते कि हिन्दी की प्रकृति उक्त शब्दानुवाद को स्वीकार करेगी या नहीं। एक लेखक महोदय लिखते हैं :

"मैंने उसका विश्वास जीत लिया है।"

यह अँग्रेज़ी के इस वाक्य का अनुवाद है :

I have won his confidence.

सोचने कि बात यह है कि क्या कहीं लड़ाई हो रही थी कि जीत और हार का प्रश्न खड़ा हो गया। होना चाहिए :

मैंने उसका विश्वास प्राप्त कर लिया है, अथवा, मैं उसका विश्वासपात्र बन गया हूँ।

(३) एक प्रसिद्ध लेखक लिखते हैं :

"वह लड़की कमरे में तैर गई।"

क्या कमरे में पानी भरा हुआ था जो लड़की उसमें तैर गई ?

(४) "मेरे जीवन ने एक नया मोड़ लिया"

जीवन का मोड़ लेना कोई हिन्दी मुहावरा नहीं है। हम नये मुहावरे अपनाने की नीति के विरोधी नहीं हैं। किन्तु यह तभी होना चाहिए जब आवश्यक हो। यदि हमारे पास उतना ही सजीव और प्रचलित मुहावरा विद्यमान हो तो नया मुहावरा लेना अनावश्यक है। कहीं अच्छा होता यदि ऊपर का वाक्य इस प्रकार लिखा जाता :

"मेरे जीवन में एक नया अध्याय आरम्भ हुआ।"

(५) "तुमने मुझे किसके लिए लिया ?"

बलिहारी है इस हिन्दी की ! यह इस अँग्रेज़ी वाक्य का अन्धानुवाद है :

For whom did you take me ? अथवा, For whom did you mistake me ?

अब प्रश्न यह आयेगा कि उपरिलिखित वाक्य का हिन्दी रूप क्या होगा। यदि हम यह कहें कि—

तुमने मुझे क्या समझा था ?

तो इसका लगभग वही अर्थ निकलेगा जो इस वाक्य का :

तुमने मुझे समझा क्या था ?

और ऊपर दिये हुए अँग्रेज़ी वाक्यों का कदापि यह आशय नहीं है। हमारे विचार में उक्त भाव इस प्रकार व्यक्त करना चाहिए।

मुझे देखकर तुम्हें किसका धोका हुआ था ?

वास्तव में ऐसे वाक्य तभी कहे जाते हैं जब दो व्यक्ति परस्पर बात करते हैं। उक्त सन्दर्भ में इस वाक्य से भी वही अर्थ निकलेगा :

तुम्हें किसका धोका हुआ था ?

(६) बहुत से लेखक इस प्रकार के वाक्य लिखते हैं :

"मैं जाने की स्थिति में नहीं हूँ।"

एक दैनिक पत्र में यह भी पढ़ा था :

"इंग्लैण्ड भारत को इन्जीनियरी सामान देने की स्थिति में नहीं है।"

स्पष्ट है कि लेखकों ने संगत अँग्रेजी वाक्यों का शब्दानुवाद करके रख दिया है। पहला वाक्य इस प्रकार लिख सकते हैं :

मैं जाने योग्य नहीं हूँ।

अथवा, मैं जाने में असमर्थ हूँ।

अथवा, मैं ऐसी परिस्थिति हूँ कि जा नहीं सकता।

अथवा, मैं जा नहीं सकूंगा।

इसी प्रकार हम उपरिलिखित दूसरे वाक्य का भी भावानुवाद कर सकते हैं।

(७) एक प्रयोग बड़े धड़ल्ले से चल रहा है :

निर्भर करता है, निर्भर करेगा।

होना चाहिए :

निर्भर है, निर्भर होगा।

किन्तु यह प्रयोग अब इतना चल पड़ा है कि ग़लत होते हुए भी कुछ वर्षों में कदाचित इसे अंगीकार करना ही पड़ेगा।

(८) एक अन्य प्रयोग इस प्रकार का है :

"यह बात शिक्षा से सम्बन्ध रखती है।"

मान लीजिए कि हम अँग्रेजी के इस वाक्य का अनुवाद करते हैं :

I have a book.

क्या इसका यह अनुवाद ठीक होगा :

मैं रखता हूँ एक पुस्तक।

हिन्दी की प्रकृति के अनुसार तो अनुवाद इस प्रकार होगा :

मेरे पास एक पुस्तक है।

इसी प्रकार उपरिलिखित वाक्य को इस रूप में लिखना चाहिए :

"इस बात का सम्बन्ध शिक्षा से है।"

अथवा, "यह बात शिक्षा से सम्बद्ध है।"

निम्नलिखित वाक्य भी इसी प्रकार के भद्दे प्रयोग का उदाहरण है।

"आज का ज़िलाधीश भी अँग्रेज़ों की मनोवृत्ति रखता है।"

इस वाक्य का भी यह रूप होना चाहिए :

"आज के ज़िलाधीश की मनोवृत्ति भी अँग्रेज़ों की सी है।"

(९) एक दैनिक पत्र में पढ़ा था।

"वर्षा में देर से सरकार चिन्तित।"

लेखक का आशय यह था कि वर्षा में देर होने के कारण सरकार चिन्तित है। किन्तु क्या उपरिलिखित वाक्यांश से यही अर्थ निकलता है? तनिक इन वाक्यों पर विचार कीजिए :

"वह कमरे में देर से खड़ा है।"

"वह वर्षा में देर से खड़ा है।"

इन वाक्यों मे 'देर' विलम्ब का सूचक नहीं है, वरन इस बात का सूचक है कि कोई काम लम्बी अवधि से हो रहा है। उपर्युक्त वाक्यांश का यह अर्थ निकलता है कि "सरकार वर्षा में चिन्तित है और बड़ी देर से चिन्तित है।" वाक्यांश का शुद्ध रूप यह होना चाहिए :

"वर्षा में विलम्ब होने के कारण सरकार चिन्तित।"

इसी को संक्षिप्त रूप में इस प्रकार भी लिख सकते हैं :

"वर्षा में विलम्ब से सरकार चिन्तित।"

(१०) न्यायालय सम्बन्धी एक पत्र में पढ़ा था :

"बस्ती के ज़िलाधीश के सन्तोष पर रिहा किये जायँगे।"

आलोचना अनावश्यक है। स्पष्ट है कि यह अँग्रेजी के एक वाक्य का अन्धानुवाद है।

(क्रमशः)

अणु और परमाणु

डॉ० नन्दलाल सिंह
अध्यक्ष, स्पेक्ट्रोस्कोपी विभाग

परमाणु-शक्ति अथवा परमाणु-बम की चर्चा सुनते-सुनते हम इतना तो अवश्य समझने लगे हैं कि इन प्रबल शक्तियों का उद्गम परमाणु का भीतरी ढाँचा ही है; किन्तु परमाणु है क्या ? उसकी रचना कैसी है ? हमें इसका ज्ञान नहीं। इसके पूर्व हमें यह भी समझना है कि परमाणु के अस्तित्व का अनुमान ही क्यों और कैसे किया गया। जब तक इन साधारण किन्तु मौलिक बातों की जानकारी हमें नहीं होगी तब तक हमें यह समझना कठिन होगा कि इतनी प्रबल शक्ति परमाणु के भीतरी ढाँचे से कैसे निकलती है।

हम परमाणु की बात क्यों करते हैं ? किन अनुभवों की प्रेरणा से हम कहते हैं कि संसार के सारे पदार्थ परमाणु-समूह से बने हुए हैं ? हम अपने आसपास ठोस वस्तुयें जैसे टेबुल, कुर्सी, लोहा, मिश्री आदि देखते हैं जिनमें कुछ चिकनी और कुछ खुरदरी दिखाई पड़ती हैं पर सभी समभाव से भरी-पूरी मालूम पड़ती हैं; अथवा पानी आदि अन्य द्रव-पदार्थ अविच्छिन्न दिखाई पड़ते हैं। यदि काँच की गिलास समरूप से भरी ठोस न होती तो उसमें से दूध, पानी शर्बत आदि चू कर निकल पड़ते।

तत्त्वदर्शी डिमाक्रिटस (Democritus) ने ईसा से चार शताब्दी पूर्व अपना विचार प्रकट किया कि पदार्थों के बाहरी रूप के अनुकूल उनकी भीतरी रचना को समझना भूल है। बाह्य रूप के अनुरूप वस्तु की भीतरी बनावट नहीं मानी जा सकती। उन्होंने बताया कि सारे पदार्थ भंजनीय हैं और वे अनगिनत छोटे-छोटे कणों से बने हुए हैं। ये कण अलग किये जा सकते हैं। विभाजन करते-करते हमें ऐसी छोटी कणिका मिलती है जिसका और अधिक विभाजन सम्भव नहीं। इस अविभाज्य मूल कणिका का नाम डिमाक्रिटस ने एटम (Atom) रक्खा। डिमाक्रिटस ने ऐसा अनुमान क्यों किया ? इसका उत्तर हमें अपने दैनिक जीवन के अनुभवों से मिल जाता है। जब हम नमक पानी में डालते हैं तो वह पानी में विलीन हो जाता है। इसी प्रकार चीनी पानी में, दूध में, चाय में घुलकर विलीन हो जाती है। यही दशा अन्य ठोस पदार्थों की उपयुक्त घोलकों में होती है। यदि जल अविच्छिन्न होता तो नमक अथवा चीनी के ठोस कण उसके भीतर कहाँ स्थान पाते ! इसी से हम अनुमान करते हैं कि पानी के भीतर अनगिनत सूक्ष्म छिद्र हैं और नमक तथा चीनी के भी ऐसे ही सूक्ष्म कण होते हैं जो पानी के भीतर रिक्त छिद्रों में घुसकर अदृश्य हो जाते हैं।

एक दूसरे प्रयोग की ओर ध्यान दीजिए। काँच के गिलास में पानी भर लीजिए और थोड़ा पोटैशियम परमैंगनेट (Potassium Permanganate) उसके भीतर डाल दीजिए। लाल पोटैशियम परमैंगनेट के कण धीरे-धीरे जल में सर्वत्र फैलते हुए दिखाई पड़ते हैं और बिना हिलाये-डुलाये सारे जल में छा जाते हैं। यदि आप चाहें तो पानी को

थोड़ा हिलाकर उसे शीघ्र समान रूप से लाल रंग का बना सकते हैं। निःसन्देह, पानी और पोटैशियम परमैंगनेट सूक्ष्म कणिकाओं के समूह हैं। उनके बीच रिक्त स्थान भी अधिक होते हैं। तभी तो एक के रिक्त स्थान में दूसरे के कण जा बैठते हैं।

एक अन्य साधारण प्रयोग बताना अजीर्ण नहीं होगा। एक लीटर पानी में एक लीटर अल्कोहल मिला दीजिए। आप देखेंगे कि मिश्रित द्रवों का आयतन दो लीटर से कम पाया जाता है। अल्कोहल के कण पानी के भीतर रिक्त स्थान पाते हैं और इसी भाँति पानी के कण अल्कोहल के कणों के बीच खाली स्थानों में घुस जाते हैं और मिश्रण का आयतन कम पाया जाता है। ऐसा ही अनुभव हमें हवा और ठोस पदार्थों के साथ होता है। जब हम कढ़ाई में घी अथवा तेल छोड़कर मिर्चे का तड़का देते हैं तो तड़का देने वाले का ही नहीं, घर के सुदूरवर्ती सारे प्राणियों की नाँक कड़वाहट से भर जाती हैं और सभी छींकने लगते हैं। इससे विदित होता है कि हवा के भीतर कणों के बीच रिक्त स्थान हैं जिनमें जलते हुए मिर्चे के कण जा बैठते हैं और जब हम स्वाँस लेते हैं तो हवा के साथ मिर्चे के कण भी नाँक में घुस कर अपना प्रभाव दिखाते हैं। जनवासों में गुलाब जल के छिड़काव से चारो ओर सुगन्ध इसी प्रकार फैलती है। कस्तूरी की सुगंध से सारा उपवन सुवासित हो जाता है। कस्तूरी के एक घन सेण्टीमीटर टुकड़े में १२० हजार-करोड़ ($१२^{१४}$) कण होते हैं।

सोने का टुकड़ा लेकर उसका एक सिरा पतला बनाकर खूब साफ़ कर लीजिए। उसी तरह का एक टुकड़ा चाँदी का भी लेकर उसका एक सिरा पतला करके साफ़ कर लीजिए। दोनों को सटाकर रखिए फिर ऊपर से उच्च दाब लगाकर दो-चार महीने छोड़ दीजिए। अलग करने पर देखा जाता है कि चाँदी और सोने के कणों का संस्पर्शीय तल के बीच आदान-प्रदान हुआ है। सोने के कण चाँदी के टुकड़े में और चाँदी के कण सोने के टुकड़े में पाये जाते हैं।

अणु-परमाणु दुनियाँ की झाँकी मिलने के पूर्व वैज्ञानिकों ने इस बात पर तर्क करना ही स्थगित कर रक्खा था कि पदार्थों की रचना ऐसी छोटी कणिकाओं से होती है। आरम्भ में भौतिक पदार्थों के गुणों की व्याख्या के लिए मानव मस्तिष्क ने केवल इन कणिकाओं की कल्पना की। दार्शनिकों ने देखा कि यदि हम इन अक्षुण्ण तथा अभाज्य कणिकाओं का अस्तित्व मान लेते हैं तो बहुत सी प्रत्यक्ष बातों का रहस्य प्रकट हो जाता है। फिर जैसे ही इन भौतिक पदार्थों के गुणों की जानकारी बढ़ती गई वैसे ही अणु-परमाणु के काल्पनिक अनुमान का समर्थन होता गया।

प्रक्रियाओं का घटना-चक्र इस प्रकार था। पहले तो सभी वस्तुओं का प्रसरण देखा गया फिर कुछ मौलिक कणों की अपरिवर्तनशीलता देखी गई। रासायनिक यौगिकों में समांगी सजातीयता पाई गई और सरल रीति से विश्लेषण करने पर इनमें से इतर मूलतत्त्व मिले। इन सब क्रियाओं को समझने के लिए अणु-परमाणु की कल्पना की गई। तर्क के लिए दूसरी सीढ़ी की झलक इस प्रकार मिली कि यदि पदार्थ अणु-परमाणु से बने हैं तो किसी पदार्थ के गुणों की पूर्व कल्पना हम कर सकते हैं। अब यदि परीक्षा करने पर उस वस्तु में वही गुण पाये जाते हैं तो अणु-परमाणु की वास्तविकता सिद्ध हो जाती है। विज्ञान

के विकास में ऐसी व्युत्क्रम क्रियायें बहुत ही उपयोगी सिद्ध हुई हैं। पदार्थ-रचना के अध्ययन में इस क्रिया का बहुत बड़ा महत्त्व है। इस विषय का विकास प्रायः नाटकीय किन्तु सरल और तर्कयुक्त पाया जाता है।

निकट भूतकाल तक किसी नें अणु तथा परमाणु को देखने की चेष्टा नहीं किया। इनके संबन्ध की सारी बातें सैद्धान्तिक ही मालूम पड़ीं। आज भी हम अच्छे से अच्छे माइक्रोस्कोप द्वारा जिसमें प्रकाश की रश्मियाँ काम में लाई जाती हैं, नहीं देख सकते। इलेक्ट्रान माइक्रोस्कोप द्वारा जिसमें इलेक्ट्रानों का उपयोग निरीक्षण के लिए किया जाता है, हम बड़े-बड़े अणुओं का वास्तविक रूप देख सकते हैं। इलेक्ट्रान माइक्रोस्कोप से प्रोटीन के अणुओं को देखा गया है। एक प्रोटीन के अणु में कई हजार परमाणु होते हैं। हाल ही में एक ऐसे उपकरण का आविष्कार हुआ है जिसके द्वारा इससे भी छोटे अणुओं की रचना देखना सुगम हो गया है। देखा गया है कि फ्थैलोसानीन (Phthalocyanin) में एक सौ से कम परमाणु होते हैं।

जब वैज्ञानिकों के सामने इलेक्ट्रान माइक्रोस्कोप से खींचा हुआ अणु का चित्र आया तो वे विभोर हो गये; किन्तु तनिक भी आश्चर्यचकित नहीं हुए, क्योंकि चित्र में अणु का रूप और आकार ठीक वैसा ही था जैसा वे पूर्व कल्पनानुसार हिसाब लगाकर मालूम कर चुके थे।

इन सब अनुभवों से हमें विदित होता है कि ऊपरी रूप से वस्तु की वास्तविक रचना का ठीक पता नहीं लगता। बाहरी रूप में सभी पदार्थ हमें अविच्छिन्न प्रतीत होते हैं, किन्तु उनके भीतर अगणित कण हैं औंर उन कणों के बीच पर्याप्त रिक्त स्थान रहता है। ऐसे रिक्त स्थान हवा, पानी, अन्य द्रवों में तथा ठोस से ठोस पदार्थों में पाये जाते हैं। न तो हम कणों को देख सकते हैं और न तो रिक्त स्थान को ही। हम उनका अनुभव ऐसे ही प्रयोगों से करते ह।

डिमाक्रिटस ने एटम शब्द का प्रयोग अणु तथा परमाणु दोनों के लिए किया था, किन्तु अणु तथा परमाणु में भेद होता है। चीनी, पानी, लकड़ी, पोटास, नौसादर, कस्तूरी आदि के अन्तिम कण 'अणु' (molcule) होते हैं; सोना, चाँदी, कार्बन, सोडियम, हाइड्रोजन आदि की अन्तिम कणिका परमाणु (Atom) होती हैं।

मूलतत्त्व (Element)

जब हम लकड़ी, कोयला, कागज तथा साग-पात, दूध, चीनी, रोटी आदि जलाते हैं तो ये सब जलकर खाक हो जाते हैं। इनकी राख को धोकर यदि शुद्ध कर लिया जाय तो हमें एक ही प्रकार का मूलतत्त्व 'कार्बन' मिलता है। यही कार्बन रूई, रेशम, मिश्री, मिठाई सबमें पाया जाता है। इस कार्बन में परिवर्तन लाने के विचार से यदि इसे किसी अम्ल (acid) में, नौसादर में, बेञ्जीन में अथवा किसी रासायनिक पदार्थ में मिलाकर उबालें तो भी कार्बन तत्त्व में कोई परिवर्तन नहीं पाया जाता। वह उसी रूप में और उन्हीं भौतिक तथा रासायनिक गुणों सहित ज्यों का त्यों रह जाता है। यदि इसे धधकती आग में जलाया जाय तो ताप के प्रभाव से गैस में बदल जाता है, किन्तु शीतल होने पर कार्बन ज्यों का त्यों पूर्ववत पाया जाता है। वही कार्बन दही, मट्ठा, संगमरमर, हीरा, अनेक

पदार्थों में मिलता है। इसे किसी भी रासायनिक विधि से खण्डित नहीं किया जा सकता। कार्बन एक मूल तत्त्व (element) है।

कार्बन की ही भाँति सोना, चाँदी, ताँबा, जस्ता, गंधक, लोहा, पारा आदि मूलतत्त्व हैं। इन सबके गुण तथा आकार एक दूसरे से भिन्न होते हैं। किसी भी रासायनिक क्रिया से हम एक को दूसरे में परिवर्तित नहीं कर सकते, कार्बन को सोना में, लोहा को चाँदी में, गन्धक को पारे में अथवा काँच को हीरे में प्रखर से प्रखर ताप अथवा रासायनिक क्रिया से बदला नहीं जा सकता। सन् १९४० ई० तक ९२ ऐसे मूलतत्त्व (elements) मालूम हो चुके थे इन्हीं को रासायनिक तत्त्व (chemical elements) कहते हैं। इन मूलतत्त्वों के अन्तिम कण को एटम (atom) कहते हैं। प्रत्येक तत्त्व का एक परमाणु होता है जो अभाज्य और दूसरे तत्त्व के परमाणु से भिन्न होता है। प्रकृति में ताँबा, चाँदी, सोना, हाइड्रोजन, अल्यूमीनियम, कार्बन, नाइट्रोजन आदि ९२ तत्त्वों के ९२ भिन्न परमाणु पाये जाते हैं।

अणु

दो अथवा अधिक परमाणुओं के संयोग से अणु बनते हैं। अणु में एक ही परमाणु अथवा भिन्न परमाणु एक से अधिक संख्या में पाये जाते हैं। प्राकृतिक पदार्थों की रचना इन्हीं अणुओं के सुसंगठन से होती है। उन्ही प्राकृतिक पदार्थों द्वारा हम अपने काम की चीज़ें बनाते हैं। कुर्सी, टेबुल, मेज, खिड़की, दरवाजे आदि हम लकड़ी से बनाते हैं। विभिन्न प्रकार के कपड़े रूई, रेशम, फलालैन से बनाते हैं। अनेक प्रकार के खाद्य-पदार्थ अन्न से बनाते हैं। अनेक प्रकार के पत्थर, संगमरमर, जवाहिरात चट्टानों में मिलते हैं। इन प्राकृतिक पदार्थों की रचना भी विचित्र किन्तु सुव्यवस्थित है। लकड़ी को चीरकर आप देखें तो उसके भीतर अनेक मोटी-पतली तहें दिखायी पड़ती हैं। इन तहों के रेशे एकान्तर क्रम से कड़े और नरम होते हैं। लकड़ियों का भेद तहों के सूक्ष्मतम कणों के गुण पर निर्भर होता है। लकड़ी की भीतरी रचना सब दिशा में समान नहीं बल्कि बिन्दु-बिन्दु पर भिन्न होती है; किन्तु लकड़ी के भीतर मुख्य अंश सेलुलोस का होता है जो शुद्ध करके निकाला जा सकता है। इस सेलुलोस की बनावट एक ही समान सब दिशा में पाई जाती है। ऐसे ही अन्य वस्तुओं के भीतर से अनेक शुद्ध समांशी मुख्य भाग निकाले जा सकते हैं। ऐसी मौलिक वस्तुओं की संख्या अब कई हजार तक पहुँच चुकी है। चीनी, नमक, लोहा, ताँबा सोडियम बाई-कार्बोनेट, पेन्सिलीन, डी० डी० टी०, अल्कोहल इत्यादि कुछ ऐसी ही वस्तुयें हैं जिनका उपयोग हम सब करते हैं। इन सबको हम विशुद्ध रूप में उपार्जित कर सकते हैं। इन शुद्ध वस्तुओं के सूक्ष्मतम कण में वस्तु के सारे रासायनिक और भौतिक गुण विद्यमान पाये जाते हैं। इनको हम रासायनिक यौगिक (chemical compound) कहते हैं। किसी भी रासायनिक यौगिक का रासायनिक विधि द्वारा विश्लेषण करने पर हमें उन्हीं ९२ तत्त्वों में एक अथवा अधिक तत्त्व मिलते हैं।

यदि हम खल में कूटकर गन्धक और लोहे को यों ही मिला दें तो भी मूलतत्त्व गन्धक और लोहा अपने असली रूप में पड़े रहते हैं। माइक्रोस्कोप की सहायता से हम दोनो को अलग-अलग देख सकते हैं। यदि इस मिश्रण को हम गरम करें तो उनके रंग में परिवर्तन हो जाता है। गन्धक और लोहा के मूलतत्त्व अब अपने मूल रूप में नहीं रह

जाते। ताप के कारण दोनों मिल कर एक नया रासायनिक यौगिक बना लेते हैं। इसे लौह सल्फाइड कहते हैं। इसका रूप, रंग और गुण गन्धक और लौह से भिन्न पाया जाता है। इसे शुद्ध रूप में हम तैयार कर सकते हैं। यह लौह-सल्फाइड प्रकृति में भी पाया जाता है और इसके मणिभ पीले सोने के रंग के होते हैं।

रासायनिक यौगिक की रचना किस प्रकार की होगी ? निःसन्देह, यह यौगिक भी सूक्ष्मतम कणों के जुटने से बना होगा; क्योंकि इस सब में विसर्पण (diffusion) और आदान-प्रदान के गुण पाये जाते हैं। वास्तव में, ऊपर के उदाहरण में चीनी और नमक के यौगिकों को ही लिया गया था। यौगिक के सूक्ष्मतम मूलतत्त्वों के कण परमाणुओं के संयोजन से बनते हैं। इस प्रकार गन्धक और लोहे के एक-एक परमाणु मिलकर लौह सल्फाइड (Iron sulfide) यौगिक की एक नई इकाई बनाते हैं। इसी इकाई को हम अणु कहते हैं।

अणु की रचना ९२ तत्त्वों के दो अथवा दो से अधिक परमाणुओं के संयोजन से होती है। अणु का सरलतापूर्वक विश्लेषण कर हम उन्हीं मूल तत्त्वों के परमाणुओं को पाते हैं। अतः अणु में अपनी सत्ता रखते हुए परमाणु एक दूसरे से जुटे रहते हैं। अणु चाहे कितना ही बड़ा हो, उसमें चाहे जितने भी परमाणु संयोजित हों, विश्लेषण करके हम उन सब परमाणुओं को अलग कर लेते हैं।

परमाणु की तौल

अठारहवीं शताब्दी के अन्त में मौलिक तत्त्वों और रासायनिक यौगिकों का भेद मालूम हुआ। सन् १७८० ई० में अन्ताइन लैवाशियर ने लगभग ५० मूलतत्त्वों की सूची तैयार किया जिनकी खोज उस समय तक हो चुकी थी। इन तत्त्वों तथा उनके यौगिकों का अध्ययन कर लैवाशियर इस निष्कर्ष पर पहुँच चुके थे कि जब एक वस्तु दूसरे रूप में बदलती है; अथवा जब एक यौगिक के विश्लेषण से मूलतत्त्व निकलते हैं तो उनकी तौल में कोई परिवर्तन नहीं होता। इसी को द्रव्य की अविनाशिता का सिद्धान्त कहते हैं। परिवर्तनशील होते हुए भी प्रकृति अविनाशी है। पदार्थों के साथ चाहे जो क्रिया की जाय और उसके फलस्वरूप पदार्थों में परस्पर जैसी भी रासायनिक क्रिया सम्पन्न हो, उन क्रियाओं के उपरान्त उनमें कितना भी रूपान्तर हो जाय, परन्तु प्रयोग के प्रारम्भ और अन्त के पदार्थों की तौल एक ही पाई जाती है।

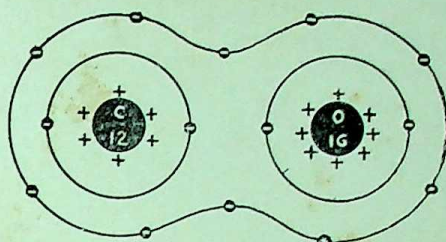
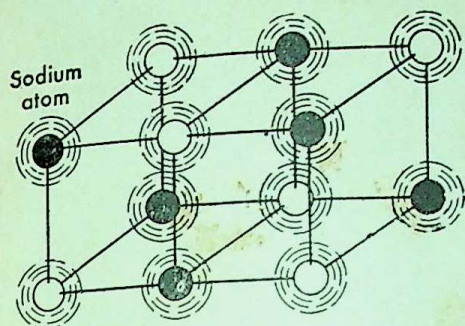
लैवाशियर ने सर्व प्रथम मोमबत्ती का प्रयोग किया था। जब हम बत्ती जलाते हैं तो वह धीरे-धीरे पिघलती हुई घटती जाती है और प्रकाश के साथ कुछ गैसें निकलती रहती हैं। यदि बत्ती बन्द काँच के जार में जलाई जाती है तो भीतरी हवा का कुछ अंश जलने में खर्च हो जाता है। शेष वायु श्वाँस लेने योग्य नहीं रह जाती। लैवाशियर को मालूम था कि मोमबत्ती जलाने पर बत्ती के सहारे पिघली हुई मोम चढ़ती है और ऊपर हवा से आक्सीजन लेकर जलती रहती है। इस रासायनिक क्रिया में पानी का वाष्प और कार्बन-डाई-आक्साइड गैस बनती रहती है। समीकरण के रूप में इस प्रयोग की विधि निम्नलिखित पाई जाती है।

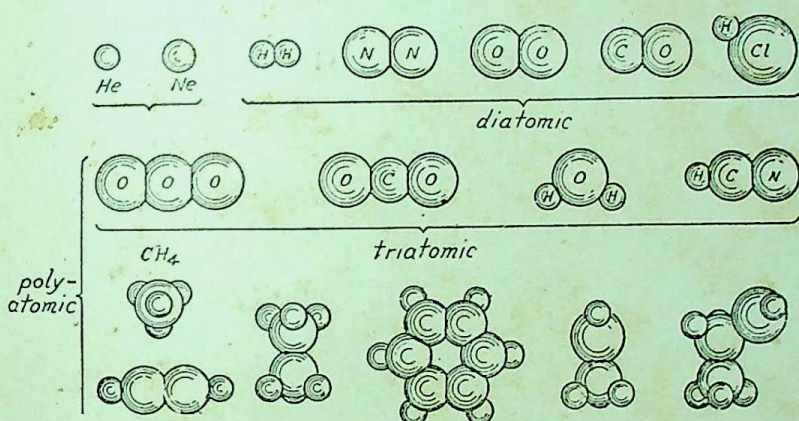
मोमबत्ती + हवा से आक्सीजन = कार्बन-डाई-आक्साइड + जलवाष्प

लैवाशियर के अनुसार मोमबत्ती को तौल लीजिए और हवा से जितना आक्सीजन खर्च होता है उसकी तौल मालूम कीजिए। इन दोनों की तौल ठीक कार्बन-डाई-आक्साइड और जलवाष्प की तौल के बराबर पाई जाती है। ऐसी रासायनिक क्रिया में प्रारम्भिक पदार्थ अपनी तीन अवस्थाओं में चाहे जिस अवस्था में हो और अन्तिम उत्पादित पदार्थ चाहे जिस किसी रूप में पाये जाँय, द्रव्य-अविनाशिता का सिद्धान्त गलत नहीं पाया जाता। इतना ध्यान अवश्य रखना चाहिए कि क्रिया के अन्तर्गत जितने पदार्थ भाग लें और उनके द्वारा जितने नवीन पदार्थ बनें उनको सावधानी के साथ एकत्र करना और सबका यथार्थ तौल मालूम करना चाहिए।

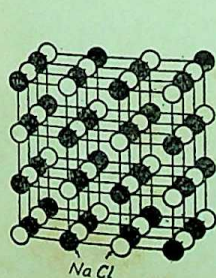
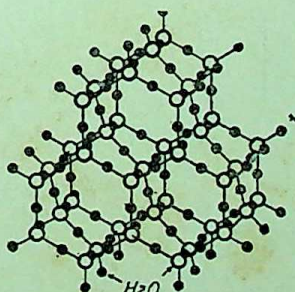
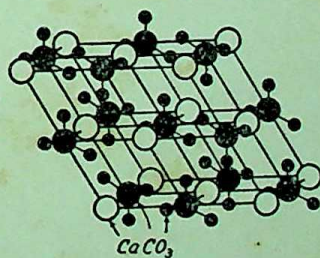
इस अविनाशिता के सिद्धान्त को हम अदृश्य अणु तथा परमाणु के शब्दों में भी व्यक्त कर सकते हैं। पदार्थ की तौल उसके भीतर परमाणुओं की तौल के बराबर होती है। भीतरी परमाणु चाहे जिस विधि से आपस में जुटकर अणु बनाते हों, उनकी तौल उस बंधी स्थिति में भी वही रहती है। इस सामान्य नियम से अनेक बातों का स्पष्टीकरण हुआ और इसके प्रतिपादन के उपरान्त जितने प्रयोग किये गये, उनके द्वारा पदार्थ-रचना पर बहुत अधिक प्रकाश पड़ा। निष्कर्ष यह निकला कि यौगिक बनाते समय परमाणुओं का संयोजन निश्चित अनुपात से होता है।

जब कोयला अथवा कार्बन जलाया जाता है तो तौल के हिसाब से कार्बन का ३ भाग सदा आक्सीजन के ८ भाग से संयोजित होता है अर्थात् ३ औंस कार्बन जलने के लिए सदा ८ औंस आक्सीजन हवा से खर्च होता है। इसी भाँति जब हवा का हाइड्रोजन जल-वाष्व में परिवर्तित होता है तो तौल से हाइड्रोजन के ८ गुने आक्सीजन की आवश्यकता पड़ती है। इसी माप से यदि किसी शुद्ध रासायनिक यौगिक जैसे चीनी, पानी, कार्बन-डाई-आक्साइड का विश्लेषण किया जाता है तो ज्ञात होता है कि इनके मूल तत्त्व तौल के हिसाब से सदा एक निश्चित अनुपात से जुटते हैं। ११ पौंड कार्बन-डाई-आक्साइड से हमें ३ पौंड कार्बन और ८ पौंड आक्सीजन मिलता है। ९ पौंड जल से १ पौंड हाइड्रोजन और ८ पौंड आक्सीजन निकलता है।

आज हमें यह सब प्रक्रिया बहुत ही सहज मालूम पड़ती है। स्कूल के बच्चे भी इस हिसाब से परिचित हैं, किन्तु यदि हम अपने को आज के १५० वर्ष पीछे ले जाँय तो हमें उस विकट स्थिति का अनुभव हो सकता है जिसमें लैवाशियर और उनके समय के अन्य वैज्ञानिक उलझे हुए थे। लैवाशियर को बत्ती के प्रयोग से इतना ही विदित हुआ कि बत्ती के जलने से वायु का स्वतंत्र भाग (free air) जिसमें हम स्वाँस ले सकते हैं, व्यय हो जाता है और स्थायी भाग (fixed air) ज्यों का त्यों पाया जाता है; किन्तु उसमें न तो हम स्वाँस ले सकते हैं और न बत्तियाँ जल सकती हैं। इस प्रयोग से ज्ञान की एक नई ज्योति प्रगट हुई। अब निश्चय हो गया कि जलती हुई बत्ती हवा से आक्सीजन एक निश्चित मात्रा में खींच लेती है और स्वयं आक्सीजन के साथ भस्म होकर एक नया पदार्थ कार्बन-डाई-आक्साइड बनाती है। जब

नमक की रचना : श्वेत वृत क्लोरीन परमाणु और काले वृत सोडियम परमाणु पृष्ठ ८७

कार्बन परमाणु C और आक्सीजन परमाणु O के संयोग से अणु CO की रचना पृष्ठ ८६

पहली पंक्ति : हीलियम, नियान, हाइड्रोजन, नाइट्रोजन, आक्सीजन, कार्बन मानोक्साइड, हाइड्रोक्लोरिक एसिड

दूसरी पंक्ति : ओजोन, कार्बन-डाई-आक्साइड, जल, हाइड्रोसिआनिक एसिड

तीसरी पंक्ति : मिथेन, एसीटिलिन, बेंजीन, मिथीलअल्कोहल, इथीलअल्कोहल पृष्ठ ८८

NaCl (नमक) के मणिभ में NaCl अणुओं का संयोजन

बर्फ में H_2O के अणुओं का पारस्परिक गठन

कैलसाइट में CaCo₃ अणुओं का गठन

पदार्थ किसी रासायनिक क्रिया के अनुसार आपस में मिलते हैं और उनसे कोई नवीन वस्तु उत्पन्न होती है तो उनका संयोजन तौल के परिमाण के एक निश्चित अनुपात से होता है, इस नियम के सिद्ध होने पर ही रसायन-विज्ञान की वास्तविक नींव पड़ी और इसी के आधार पर पदार्थ-रचना की जानकारी का दूसरा मंजिल स्पष्ट दिखाई देने लगा। यह मंजिल जॉन डाल्टन को सन् १८०८ ई० में दिखाई पड़ी। उन्होंने आधुनिक परमाणु-सिद्धान्त का प्रतिपादन किया। डिमाक्रिटस का प्रारम्भिक विचार सैद्धान्तिक दृष्टि से बुनियादी रहा; किन्तु क्रियात्मक दृष्टि से अन्धकारमय था। उन्होंने यही बताया था कि संसार के जितने पदार्थ हैं वे ऊपरी रूप में समांगी दिखाई पड़ते हुए भीतर से खण्डित हैं और अगणित अक्षुण्ण तथा अभाज्य परमाणुओं से बने हुए हैं। डाल्टन का कार्य यहीं से प्रारम्भ होता है। उन्होंने परमाणु के अस्तित्व की कल्पना वैज्ञानिक दृष्टि से किया जो पदार्थ-रचना की जानकारी में सफलतापूर्वक कार्यान्वित हो सका।

डाल्टन ने बताया कि किसी भी मूलतत्त्व के सारे परमाणु एक समान होते हैं। कार्बन तत्त्व के सारे परमाणु एक ही तरह के, हाइड्रोजन के सारे परमाणु एक ही रूप के और लोहे के सब परमाणु एक समान होते हैं। उन्होंने यह भी बताया कि भिन्न तत्त्वों के परमाणुओं का भार भिन्न होता है। आक्सीजन का परमाणु हाइड्रोजन के परमाणु से भारी होता है और लोहे का परमाणु आक्सीजन के परमाणु से भारी होता है। दो, तीन, चार की संख्या में विभिन्न परमाणुओं के संयोजन से अणु बनते हैं। अणु के भीतर परमाणुओं का रूप ज्यों का त्यों बना रहता है और किसी यौगिक के अणु में परमाणुओं की संख्या निश्चित रहती है। अतः एक अणु का भार उन्हीं संघटित परमाणुओं के भार के जोड़ के बराबर होता है। इसी कारण तत्त्वों का संगठन तौल के हिसाब से एक निश्चित अनुपात में होता है।

इस प्रकार के व्यावहारिक सिद्धान्त से हमारी जानकारी बहुत बढ़ी। हम जानते हैं कि तौल के हिसाब से ३ भाग कार्बन और ८ भाग आक्सीजन के योग से कार्बन-डाई-आक्साइड बनती है (सारिणी १)। मान लीजिए कि इस क्रिया में कार्बन का एक परमाणु आक्सीजन के दो परमाणुओं से संयोजित होता है तो इन दोनों आक्सीजन के परमाणुओं का भार कार्बन के एक परमाणु के भाग से ८:३ के अनुपात में होना चाहिए। यदि आक्सीजन के २ परमाणु का भार ८ इकाई है तो एक का भार ४ इकाई हुआ। अतः कार्बन और आक्सीजन परमाणुओं के भार का अनुपात ३:४ होना चाहिए, जिसे हम ६:८ अथवा १२:१६ भी लिख सकते हैं। किसी अनुपात को बड़ी संख्याओं से हम किस सुविधा के लिए व्यक्त करते हैं यह जल के उदाहरण से स्पष्ट हो जायगा।

तौल के हिसाब से जल में १ भाग हाइड्रोजन और ८ भाग आक्सीजन होता है। मान लीजिए कि जल के अणु में हाइड्रोजन के दो परमाणु आक्सीजन के एक परमाणु से संगठित हैं तो हाइड्रोजन के दोनों परमाणुओं का भार १ इकाई हुआ। अतः एक परमाणु का भार $\frac{1}{2}$ इकाई होता है; अर्थात् हाइड्रोजन और आक्सीजन के परमाणुओं का आपेक्षिक भार $\frac{1}{2}$: ८ हुआ जो सरल करने पर १:१६ होता है।

(सारिणी १)

	क्रिया	कार्बन+आक्सीजन=कार्बन-डाई-आक्साइड
प्रायोगिक फल	राशिमात्रा (पौंड में)	३ + ८ = ११
	संयोजनीय तौल	३ + ८ = ११
सैद्धान्तिक विवेचन	परमाणु	● + ●● = ●●●
	समीकरण	$C + O_2 = CO_2$
	आपेक्षिक तौल	३ + २×४ = ११
	परमाणु तथा अणु का भार	१२ ± २×१६ = ४४

कोयला जलाने से जब कार्बन और आक्सीजन संगठित होते हैं तो तौल के हिसाब से वे एक निश्चित अनुपात से संयोजित होते हैं। इन अनुपातों की व्याख्या परमाणु-सिद्धान्त के अनुसार संगठित परमाणुओं के परमाणु-भार से दी गई है। रासायनिक क्रिया में द्रव्य की राशिमात्रा से परमाणुओं के गुणों का पता लगता है। इन परमाणुओं को तौलने के लिए आक्सीजन के परमाणु का भार इकाई मान लिया गया है। इस परमाणु का भार १६ इकाई होता है। इसके अनुपात से हाइड्रोजन-परमाणु का भार १ और कार्बन-परमाणु का भार १२ होता है। हाइड्रोजन, कार्बन, आक्सीजन के परमाणुओं का आपेक्षिक भार इनकी उतनी मात्रा से मालूम किया गया है जितनी मात्रा में तौल के हिसाब से वे कार्बन-डाई-आक्साइड और जल में पाये जाते हैं। यही डाल्टन के कल्पना की वास्तविक देन है। विभिन्न तत्त्वों के परमाणुओं के भार में वही अनुपात पाया जाता है जिस अनुपात में तौल के हिसाब से वे तत्त्व परस्पर संगठित होकर यौगिक बनाते हैं; अर्थात् तौल के हिसाब से जिस अनुपात में तत्त्व संगठित होकर यौगिक बनाते हैं उनके परमाणु-भार में सम्वन्ध उसी अनुपात के बराबर होता है। आप देखेंगे कि यहीं पर वास्तविक निरीक्षण और प्रतिपादित सिद्धान्त का समन्वय हो रहा है। वास्तविकता तो यह है कि यौगिक निर्माण में तत्त्वों का संगठन तौल के परिमाण में निश्चित अनुपात से होता है। यह उनकी संयोजनीय तौल (Combining weight) कही जाती है। सैद्धान्तिक विवेचन यह है कि इस संयोजनीय तौल का मान तत्त्वों के परमाणुओं के आपेक्षिक भार पर निर्भर होता है।

यहाँ पर हमने संयोजनीय तौल (Combining weight) के लिए पूर्ण संख्याओं का उपयोग किया है। यह केवल सुविधा के लिए नहीं बल्कि इनका निकटतम मान ही इतना पाया जाता है। निकटतम मान प्रायः पूर्ण संख्या नहीं होती है, इसमें कुछ विशेष

रहस्य है जिसका ज्ञान हमें आगे चलकर होगा। जॉन डाल्टन के समय में बहुत से तत्त्वों का संयोजनीय तौल निकाला जा चुका था और आक्सीजन की १६ इकाई मात्रा को अविहित रूप से प्रमाण मानकर इन तत्त्वों का परमाणु भार भी ज्ञात हो गया था। उनमें से प्रथम १२ तत्त्वों का विवरण नीचे दिया गया है :—

तत्त्व	संकेत	परमाणु-भार
हाइड्रोजन	H	१.०१
लीथियम	Li	६.९४
बेरीलियम	Be	९.०२
बोरान	B	१०.८२
कार्बन	C	१२.०१
नाइट्रोजन	N	१४.०१
आक्सीजन	O	१६.००
फ्लोरीन	F	१९.००
सोडियम	Na	२३.००
मैग्नीशियम	Mg	२४.३२
अल्यूमीनियम	Al	२६.९७
सिलीकान	Si	२८.०६

इस सारिणी को देखने से पता चलता है कि केवल मैग्नीशियम और अल्यूमीनियम को छोड़कर बाकी तत्त्वों का परमाणु-भार यदि पूर्ण संख्या नहीं तो उस संख्या के सन्निकट ही है। साथ ही साथ यह भी विदित होता है कि तत्त्वों का परमाणु-भार हाइड्रोजन के परमाणु-भार का कोई अपवर्त्य (multiple) होता है। हाइड्रोजन का परमाणु-भार लगभग १ है। परमाणुओं का भार हाइड्रोजन परमाणु के भार का अपवर्त्य होना और पूर्ण संख्या न होते उसके निकटतम होना वैज्ञानिकों के लिए गूढ़ समस्या बनी रही। डाल्टन के समकालीन विलियम प्राउट ने अनुमान किया कि अन्य सभी परमाणु हाइड्रोजन के परमाणु से बने हैं; किन्तु यह विचार मान्य न हो सका, कारण कि परमाणुओं का भार पूर्ण संख्या से कुछ न कुछ अधिक ही होता है। हम देखेंगे कि परमाणु-रचना-विकास के इतिहास में जब-जब परमाणु सम्बन्धी नई जानकारी की व्याख्या के लिए नये सिद्धान्त प्रस्तुत किये गये हैं तब-तब सिद्धान्तों की सर्वमान्यता के लिए पूर्ण संख्या का प्रश्न उठाया गया है। उच्चतम यथार्थता से नाप-तौल की गई; किन्तु पूर्ण संख्या का प्रश्न सदा जटिल बना रहा। भार के वास्तविक और इच्छित मान के अन्तर की व्याख्या करने की प्रेरणा से परमाणु एवं अणु की रहस्यमयी रचना में अपेक्षित नई घटनाओं की खोज की गई।

परमाणुओं की क्रमबद्धता

डाल्टन ने परमाणु-सिद्धान्त का प्रतिपादन १९ वीं शताब्दी के प्रारम्भ में किया। इससे वैज्ञानिकों को बड़ा प्रोत्साहन मिला। मूलतत्त्वों की खोज में सभी संलग्न हो गये। उसी शताब्दी के मध्य तक लगभग ७५ मूलतत्त्वों की खोज और उनके गुणों की जानकारी हुई जिनके द्वारा रासायनिक ज्ञान और भी बढ़ा। पहली बात तो यही मालूम हुई कि तत्त्वों

का परमाणु-भार भिन्न होता है और उन्हें क्रमबद्ध सारिणी में सजाया जा सकता है। दूसरी बात यह मालूम हुई कि उनमें से कुछ तत्त्वों के गुण समान हैं और ऐसे समान गुण वाले तत्त्व तीन-तीन के समूह में पाये जाते हैं। इस समूह का नाम 'त्रयी' (triad) रक्खा गया। सबसे पहले ताँबा, चाँदी और सोना को त्रयी माना गया। इन तीन उपयोगी धातुओं की जानकारी बहुत पहले से थी; फिर लीथियम, सोडियम और पोटैशियम त्रयी का पता लगा। इस दूसरे त्रयी के तत्त्व भी धातु ही हैं, किन्तु वे बड़े कोमल होते हैं। छीलने पर कुछ क्षण तो चमकते रहते हैं, किंतु हवा के प्रभाव से तुरन्त ही मलिन हो जाते हैं। पानी के संस्पर्श में तीनों जल उठते हैं। इसी कारण उन्हें मिट्टी के तेल में रक्खा जाता है। इनमें से किसी तत्त्व के यौगिक में से उस तत्त्व को हटाकर दूसरे अथवा तीसरे तत्त्व का यौगिक बनाया जा सकता है। इन यौगिकों में भी समानता पाई जाती है। जिस प्रकार साधारण नमक जिसे सोडियम क्लोराइड कहते हैं–सफेद, रवादार, नमकीन और जल में घुलनशील होता है उसी प्रकार लीथियम क्लोराइड और पोटैशियम क्लोराइड के रवे साधारण नमक के समान सफ़ेद रवादार और नमकीन होते हैं। ये दोनों भी जल में वैसे ही घुलनशील हैं।

उस समय संख्या ३ कुछ रहस्यमयी संख्या समझी जाती थी जिसके प्रभाव से लोग 'त्रयी' की खोज में अधिक लगे रहे और संयोग से कई त्रयी समूह का पता भी लगा; किन्तु जैसे-जैसे अन्य तत्त्वों का पता लगा, त्रयी का भ्रम दूर हुआ। उन्हीं तीन के समान गुणवाले और अधिक तत्त्व मिले जिनसे समूह की संख्या बढ़कर ४, ५, ६ होने लगी; किन्तु इन त्रयी समूहों से अधिक जिज्ञासा बढ़ी। क्या बात है कि ६३.६, १०७.९ और १९७.२ परमाणु-भार में इतना अन्तर रखने वाले तत्त्व ताँबा, चाँदी और सोना के गुणों में समानता पाई जाती है। ३२.१ और ३५.५ परमाणुभार के तत्त्व गन्धक और क्लोरीन के गुणों में इतनी भिन्नता पाई जाती है? गन्धक पीले रंग का ठोस तत्त्व होता है और क्लोरीन हरी गैस होती है। इनकी व्याख्या के लिए अनेक कल्पनायें की गईं और बहुत-सी युक्तियाँ सोची गईं। तत्त्वों को विभिन्न रीति से समूहों में बैठाने की कोशिश की गई; किन्तु सन् १८६९ ई० तक सभी प्रयत्न असफल रहे। उसी वर्ष रूस के रसायनशास्त्री मैण्डलीव (D. I. Mendelejiv) ने तत्त्वों को एक क्रम से सजाकर एक आवर्त सारिणी (Pariodic Table) बनाया जिसके द्वारा न केवल ज्ञात तत्त्वों के रासायनिक गुणों की समानता देखी गई बल्कि अज्ञात तत्त्वों के गुणों का अनुमान करना और उसी आधार पर उन्हें ढूँढ़ निकालना साध्य हो सका। उस समय से यह आवर्त-सारिणी तत्त्व सम्बन्धी रासायनिक और भौतिक ज्ञान-विकास के लिए उद्धरणी हो गई। इसके द्वारा अनेक बातों की व्याख्या की गई है और भौतिक जगत् की खोज में हमारा उत्साह बढ़ा। आज इसी आधार-भित्ति पर आधुनिक परमाणु-भौतिकी और रसायनशास्त्र की अनुपम अट्टालिकाएँ खड़ी हैं जिसकी देन महान् परमाणु-शक्ति और विध्वंसकारी परमाणु-बम हैं। आज हमें ९९ मूलतत्त्वों का पता है।

आवर्त-सारिणी बनाने के लिए एक चौड़े फीते पर ९९ मूलतत्त्वों का नाम उनके परमाणु-भार के क्रम से हाइड्रोजन से प्रारम्भ करके लिख लीजिए और उन पर १ से ९९ तक की संख्या बैठा दीजिए। फिर इस फीते को विभिन्न खण्डों में बाँटने के लिए दो खण्डों के बीच एक मोटी रेखा इस प्रकार खींच दीजिए कि पहले खण्ड में दो तत्त्व, दूसरे और

आवर्त सारिणी भाग—१

1 H
2 He
3 Li
4 Be
5 B
10 Ne
11 Na
12 Mg
13 Al
18 A
19 K
20 Ca
21 Sc
22 Ti
23 V
24 Cr
25 Mn
26 Fe
36 Kr
37 Rb
38 Sr
39 Y
40 Zr
41 Nb
42 Mo
43 —
44 Ru
54 Xe
55 Cs
56
63 Eu
64 Gd
65 Tb
66 Dy
67 Ho
68 Er
69 Tm
70 Yb
71 Lu
72 Hf
73 Ta
74 W
75 Re
76 Os
86 Rn
87 —
Ra
89 Ac
90 Th
91 Pa
92 U

आवर्त सारिणी भाग—२

कुण्डलाकार फीते पर १-९२ तत्वों की आवर्त सारिणी (पृष्ठ ९२-९३)

तीसरे में ८ तत्त्व, चौथे और पाँचवे खण्ड में १८ तत्त्व, छठे खण्ड में ३२ तत्त्व आ जाँय; फिर अन्तिम (सातवें) खण्ड में बाकी १३ तत्त्व सम्मिलित हों। अब इस फीते को कुण्डलित कर ऐसा रखिए कि जिस मोटी रेखा से कोई खण्ड प्रारम्भ होता हो ठीक उसी रेखा पर वह खण्ड आकर समाप्त हो। इस प्रकार सातो खण्ड के प्रथम तत्त्व ठीक एक उर्ध्व-स्तम्भ में एक के नीचे दूसरे आ जाते हैं। इसी प्रकार सभी खण्डों के अन्तिम तत्त्व ऊर्ध्व स्तम्भाकार एक के नीचे दूसरे आ जाते हैं और पूरी आवर्त-सारिणी तैयार हो जाती है। सारिणी का रूप सुविधा के लिए दो भागों में दिखाया जाता है। एक में कुण्डलित फीते का बायाँ और दूसरे में दाहिना भाग दिया जाता है; ताकि तत्त्वों का नाम लगातार पढ़ा जा सके। पहले खण्ड में केवल दो तत्त्व हाइड्रोजन और हीलियम होते हैं इसलिए इस भाग को अधिक कड़ाई के साथ मोड़ा जाता है। इस तरह हाइड्रोजन और हीलियम भी कुछ अलग हो जाते हैं और हाइड्रोजन दोनों भागों में आ जाता है। परमाणु-संख्या ५७ से ७१ तक के तत्त्व एक ही घर में भरे जाते हैं। वास्तव में, इनका एक अलग वर्ग है जिनको एक दूसरे सर्पाकार फीते पर चढ़ाना चाहिए। किन्तु इस वर्ग का उद्धरण इस अवसर पर देना किसी लाभ का नहीं। यही बात परमाणु-सख्या ८९ से आगे के तत्त्वों के लिए भी लागू है; किन्तु वे क्रमानुसार अन्त में पड़ते हैं, इसलिए उन्हें फैलाकर दिखाया जाता है और कृत्रिम तत्त्वों को (९३ से लेकर ९९ तक) एक ही खाने में भर दिया जाता है।

आवर्त-सारिणी के खण्डों में २, ८, १८ अथवा ३२ तत्त्व पाये जाते हैं। इन संख्याओं को मनमानी नहीं लिया गया है। यदि आप प्रारम्भिक अंक १, २, ३, ४ लेकर उनका वर्ग मालूम करें और वर्गफल को २ से गुणा कर दें तो यही संख्यायें मिलती हैं; यथा—

$$१^2 \times २ = २$$
$$२^2 \times २ = ८$$
$$३^2 \times २ = १८$$
$$४^2 \times २ = ३२$$

ऐसी संख्या-श्रेणी का पता मैण्डलीव को नहीं था।

इस आवर्त-सारिणी से अनेक रोचक बातों की जानकारी हुई है। सारिणी के पहले खण्ड में दो ही तत्त्व हैं—पहला तत्त्व हाइड्रोजन और अन्तिम हीलियम है जो एक निष्क्रिय गैस है। दूसरे खण्ड का पहला तत्त्व लीथियम है जो एक कोमल धातु है और अन्तिम तत्त्व नियोन गैस है जो लीथियम की तरह अक्रिय है। तीसरे खण्ड का पहला तत्त्व सोडियम भी लीथियम की भाँति कोमल धातु है। अन्तिम अरगान अक्रिय गैस है। चौथे खण्ड में भी पहला तत्त्व पोटैशियम कोमल धातु और अन्तिम निष्क्रिय गैस क्रिप्टान है। इस खण्ड में तत्त्वों की संख्या अधिक है। पंचम खण्ड में पहला तत्त्व लीथियम, सोडियम, पोटैशियम के समान गुण वाला पहला तत्त्व रूबीडियम है और अन्तिम निष्क्रिय गैस ज़ेनान है। सारांश यह कि पहले ऊर्ध्व स्तम्भ के सभी तत्त्व समान गुण वाले और उसी प्रकार अन्तिम ऊर्ध्व स्तम्भ के सभी तत्त्व एक समान गुण के होते हैं।

ठीक यही विशेषता अन्य छोटे-बड़े स्तम्भों में भी पाई जाती है। तनिक पूर्व-परिचित "त्रयी" तत्त्वों पर ध्यान दीजिए। ताँबा, चाँदी, सोना के समान जिंक, कैडमियम

परद कीमियागिरी के समय से त्रयी माने गये थे। इनके समान अन्य त्रयी तत्त्व मिले। अब प्रत्येक कुण्डली के अन्तिम तत्त्व के ठीक पहले तत्त्वों को लीजिए। इस स्तम्भ में फ्लोरीन, क्लोरीन, ब्रोमीन, आयोडीन समान गुण के तत्त्व हैं। सब जानते हैं कि इनमें पहले तीन गैस हैं जिनकी गन्ध बड़ी कटु और दुखदायी होती है और तनिक गरम करने पर चौथा ठोस तत्त्व आयोडीन भी तिक्तगन्धयुत गैस में बदल जाता है।

हीलियम वाले स्तम्भ में इसके नीचे वाले तत्त्वों की श्रेणी विचित्र है। इस श्रेणी के सभी तत्त्व गैस हैं और मैण्डलीव के समय में इनका न तो पता था और न ऐसे तत्त्वों के होने की सम्भावना ही थी। इनकी खोज सन् १८९० ई० में लार्ड रैले और विलियम रैमज़े ने किया। इनमें से रेडान तत्त्वको छोड़कर बाकी सब हवा में बहुत कम मात्रा में पाये जाते हैं। इनको नोबुल गैस (साधु गैस) कहा गया है। इन तत्त्वों के यौगिक अन्य तत्त्वों के साथ नहीं पाये जाते क्योंकि वे किसी दूसरे तत्त्व से छेड़छाड़ न कर अपने ही में स्वान्तःसुखाय अनुभव करते हैं। अन्य तत्त्व एक दूसरे में किसी न किसी प्रकार जुट जाते हैं किन्तु साधु तत्त्व किसी से सम्पर्क नहीं रखते। प्रत्येक कुण्डली के अन्त में इस श्रेणी का एक सदस्य रहता है। इस श्रेणी के अन्य सदस्य इसी स्तम्भ में पाये जाते हैं। मैण्डलीव के समय केवल ७५ तत्त्व मालूम थे। अतः उस समय गुणों की समानता के अनुसार सारिणी में तत्त्वों को सजाना इतना सरल नहीं था जितना आज सुगम है। बहुत से स्थान रिक्त रखने पड़े, किन्तु जितने भी तत्त्व मालूम थे उन्हीं को लेकर ऐसी आवर्त सारिणी बनाना, उस मस्तिष्क की निर्माण-कुशलता का अद्भुत चमत्कार था। केवल सारिणी प्रस्तुत कर मैण्डलीक सन्तुष्ट नहीं हुए। उन्होंने अज्ञात तत्त्वों का आगम बताया, उनके गुणों को बताया, उनकी रूपरेखा बताई जो समय पाकर प्रत्येक तत्त्व के लिए अक्षरशः सत्य पाई गई।

उदाहरण के लिए चौथे खण्ड के ३२ वें तत्त्व पर ध्यान दीजिए। यह तत्त्व अपने ऊर्ध्व स्तम्भ के भीतर सिलिकान और टिन के बीच में पड़ता है। आज इसे जर्मेनियम कहते हैं, तत्त्व का पता सन् १८७१ ई० में मैण्डलीव ने लगाया था और इसका नाम सिलिनियम रक्खा था। उन्होंने पहले ही घोषणा किया कि इस तत्त्व का रंग सफेदी लिए भूरा होना चाहिए। हवा में जलने से इसका भस्म सफेद रंग का होना चाहिए और इस तत्त्व पर किसी अम्ल अथवा अल्कली धातु का कोई प्रभाव नहीं पड़ना चाहिए। उन्होंने इस तत्त्व का परमाणु-भार, घनत्व, परमाणु-आयतन, और इसके क्वथनांक मान को भी बता दिया था। वैज्ञानिकों के आश्चर्य का ठिकाना नहीं रहा जब १५ वर्ष बाद क्लिमेंस विंक्लर ने इस तत्त्व को खोज निकाला और शुद्ध रूप में प्राप्त कर लेने पर उसमें वही सब गुण पाया जो मैण्डलीव वर्षों पहले बता गये थे। विंक्लर ने अपने राष्ट्र के सम्मान के लिए इसका नाम जर्मेनियम रक्खा।

भविष्यवाणी प्रायः गूढ होती है और उससे भी गूढ अज्ञात वस्तुओं के गुणों का बताना होता है। कभी-कभी तो यह सरल और सुस्पष्ट विदित हो जाते हैं और कभी भीतरी प्रेरणा से वही लोग अनुमान कर सकते हैं जो विषय के पूर्ण विशेषज्ञ होते हैं।

आवर्त-सारिणी के आधार पर गूढोक्ति इस कारण सुगम है कि तत्त्वों के गुण स्वयं आवर्तनीय हैं। जब हम तत्त्वों को परमाणु-भार के क्रम से सजा लेते हैं तो नियमित अन्तर के तत्त्वों के गुण समान पाये जाते हैं।

मान लीजिए कि लीथियम स्तम्भ में किसी एक तत्त्व का हमें पता नहीं है। ऐसे तत्त्व के बारे में हम कह सकते हैं कि वह एक कोमल धातु होगी या वह धातु क्षारक होगी। ऐसी धातु स्वतंत्र रूप से प्रकृति में नहीं पाई जा सकती क्योंकि इस समुदाय में इसके जितने भाई-बन्धु हैं वे तुरन्त हवा के प्रभाव से धूमिल हो जाते हैं और पानी में जल उठते हैं। इसी रीति से फ्रैन्सियम तत्त्व के गुणों का अनुमान किया गया। फ्रैन्सियम की खोज अभी कुछ दिन हुए की गई और इसमें पूर्वोक्त वही सब गुण पाये गये। किसी अज्ञात वस्तु का सविस्तार यथार्थतम रूप, रंग, गुण बताना सरल नहीं। भविष्यद्रष्टा बनने के लिए विषय मंथन की आवश्यकता पड़ती है। प्रायः तत्त्वों का सम्बन्ध उनके परमाणुओं के आयतन के साथ दिखाया जाता है। इस आयतन का मान उतने स्थान से लिया जाता है जितना स्थान परमाणु-भार के बराबर ग्राम में तत्त्व ठोस अवस्था में घेरता है। लीथियम का परमाणु-भार ६·९४ है। अतः ६·९४ ग्राम लीथियम का जितना आयतन होगा वही लीथियम का परमाणु-आयतन (atomic volume) होता है। इसी प्रकार बेरीलियम का परमाणु-आयतन ९·०२ ग्राम बेरीलियम के आयतन के बराबर और कार्बन का परमाणु-आयतन १२·०१ ग्राम कार्बन के आयतन के बराबर होता है। इससे विदित होता है कि यह राशि भी तत्त्वों के परमाणु-भार के साथ आवर्तनीय पाई जाती है। लीथियम, सोडियम, पोटैशियम आदि क्षारीय धातुओं का परमाणु-आयतन अन्य समुदाय के तत्त्वों से अधिक पाया जाता है। रेखाचित्र में इनका स्थान शिखर-बिन्दुओं पर पड़ता है। इन शिखर-बिन्दुओं से वक्ररेखा दोनों ओर उतरती है। दाहिनी ओर के उतार पर समीपस्थ क्षारीय पार्थिव तत्त्व (alkaline earths) मैग्निशियम, कैल्शियम, स्ट्रांशियम, बेरियम आदि और बाईं ओर शून्य संयोजकता की साधु गैसें (He, Ne, A, Kr, Xe) तथा लवणजन्य तत्त्व (F, Cl, Br, I,) पाये जाते हैं। ऊँचे घनत्व की धातुयें वक्र-रेखा की पेंदी पर स्थित हैं। यदि किसी अज्ञात तत्त्व का परमाणु-भार मालूम हो तो इस रेखाचित्र पर उसका स्थान देखकर हम तत्त्व के परमाणु-आयतन का अनुमान कर सकते हैं।

जिस समय मैण्डलीव ने आवर्तसारिणी तैयार किया उस समय बहुत से खाने रिक्त पाये गये। उन्होंने समान गुण वाले तत्त्वों को एक ही स्तम्भ में सजाया था। आज सभी खानें भरे जा चुके हैं और १ से लेकर ९९ तक सब तत्त्व क्रमबद्ध रक्खे गये हैं। तत्त्वों की यह क्रमबद्ध संख्या बाद में परमाणु-भार से भी बढ़कर उपयोगी सिद्ध हुई। तत्त्व-संख्या के अनुसार ध्यान देने पर देखा जाता है कि सारिणी में समान गुण वाले तत्त्व २, ८, १८, अथवा ३२ के अन्तर पर स्थित हैं।

अब हमें समझने की उत्कण्ठा होती है कि इन तत्त्व-संख्याओं का क्या अर्थ है? और आवर्तनीयता से क्या बोध होता है? निःसन्देह इनसे परमाणु की भीतरी रचना का आभास मिलता है। किन्तु १९ वीं शताब्दी के अन्त तक किसी को इस परमाणु

जगत् का कोई ज्ञान नहीं था। उस समय तक वैज्ञानिक परमाणु को ठोस गोली की उपमा देते थे और समझते थे कि गोली के सदृश परमाणु समान रूप से ठोस और कड़ा होता है। भीतर खोखला नहीं है। आज भी परमाणु का वह रूप रासायनिक क्रियाओं के समझने में बहुत ही उपयोगी है। डी०डी०टी०, पैंसिलीन, अथवा रबर के अणुओं की रचना में हम विभिन्न परमाणु के संगठन का अनुमान ठोस गोली की ही तरह करते हैं। किसी यौगिक के मणिभ के भीतरी परमाणुओं को ठोस गोली ही के रूप में प्रदर्शित किया जाता है। अणु का गुण परमाणुओं की संयोजन-विधि पर निर्भर होता है।

क्रमशः

प्रज्ञानमानन्दं ब्रह्म

विश्वनाथशास्त्री

संस्कृत महाविद्यालयः

इदं वाक्यं ऋग्वेदस्य। एकमेवाद्वितीयं ब्रह्मेति सिद्धान्तः। प्रज्ञान स्वतश्चैतन्यम्। तद्विशेषा अनेकप्रकाराः। प्रकृष्टं उत्कृष्टज्ञानं प्रज्ञानम्। उपाधिरहितं स्वतश्चैतन्यं, कालत्रयरहितं, अवस्थात्रयविनिर्मुक्तं स्वतन्त्रं ज्ञानं तत्प्रज्ञानम्। ज्ञानेन तु मायाचैतन्यं भवति। यत ज्ञानेन चतुर्विंशतितत्त्वं चैतन्यं भवति। किमिव सूर्यश्चक्षुरिव, अग्निःपात्रमिव, चुम्बकलौहमिव, सूत्रधारचित्रमिव, काष्ठाग्निरिव, पुरुषच्छायेव, वातरेणुरिव, धनुर्धरवाण इव, वृक्षच्छायेवेति।

अमुनाप्रकारेण परा-पश्यन्ती-मध्यमा-वैखरीरूपेण चैतन्यं समस्तजगत्प्रपञ्चोत्पादनं करोति। ज्ञानशक्ति-क्रियाशक्ति-इच्छाशक्तिरूपेण चैतन्यं जगदाकार भवति। अतएव वासुदेवः परंब्रह्मेति श्रुतिः। वसन्त्यस्मिन् भूतानि इति वासुः। दीव्यतीति देवः, वासुश्चासौदेवश्चेति वासुदेवः। प्रज्ञानशब्देन 'भूतानांवासोसौवासुदेवश्च उच्यते'। अतएव निर्गतान्तःकरणेन श्रोत्रद्वारेण सः शब्दग्रहणं करोति, निर्गतान्तःकरणेन त्वक्द्वारेण स्पर्शग्रहणं करोति, निर्गतान्तःकरणेन चक्षुर्द्वारेण रूपग्रहणं करोति, निर्गतान्तः करणेन जिह्वाद्वारेण रसग्रहणं करोति, निर्गतान्तःकरणेन नासिकाद्वारेण गंधग्रहणं करोति। अतश्च पञ्चकर्मेन्द्रियप्रेरकः पञ्चज्ञानेन्द्रियप्रेरकः पञ्चमहाभूतप्रेरकः पञ्चतन्मात्रा प्रेरकः अन्तः करणचतुष्टयप्रेरकः गुणत्रयप्रेरकः मूलप्रकृतिप्रेरकः इत्यादि समस्तप्रपञ्चोत्पत्ति प्रलयात्मकं करोति। जगत्साक्षित्वेन पश्यति तत्प्रज्ञान नामधेयं ब्रह्म भवति। तस्मात् प्रज्ञानशब्देन ब्रह्मविशेषणेन सवश्वरः कथ्यते। तत्राधार ईश्वरः। मायाऽविद्यानटीनृत्यं कारयति नट इव। अतः परं—

आनन्दशब्दनिर्णयः

आनन्दोब्रह्मेति विज्ञानात्। यत आनन्दादेव खल्विमानि भूतानि जायन्ते, आनन्देन जातानि जीवन्ति, आनन्दं प्रयन्ति, अभिसंविशन्ति इति श्रुतेः। स्वस्वरूपं सुखस्वरूपं उपाधिरहितं आनन्दं करोति, यदानन्दं भवति तन्नित्यानन्दं भवत्यखण्डानन्दं, निजबोधानन्दं, सहजानन्दं, ज्ञानानन्दं, अजानन्दं, अच्युतानन्दं, रामानन्दं, विराजानन्दं, सुखानन्दं, कैवल्यानन्दं, श्रियानन्दं, अनन्तानन्दं, व्यापकानन्दं, पूर्णानिन्दं, सदानन्दं, प्रकाशानन्दं भवति। यस्मादाकाशस्यानन्दःस्यात्तर्हिप्राणस्यानन्दः कथं संभवति, जडत्वात्। अतएव ब्रह्मानन्दे जगदानन्दोभवति, ब्रह्मानन्दे क्षुद्रानन्दस्यान्तर्भूतत्वादितिश्रुतेः। समस्तप्रपञ्चसहितानन्दं यदानन्दं सत्तामात्रेण समस्तप्रपञ्चमानन्दयति, अतएव अन्नमयः, प्राणमयः, मनोमयः, विज्ञानमयः, आनन्दमयः पञ्चकोशात्मको जीवः आनन्दं प्राप्नोति। सच्चिदानन्दं परमात्मेति कथ्यते। यत्परं ब्रह्मानन्दं सत्तामात्रेण मूलप्रकृतेरानन्दप्राप्तिर्भवति तत्कार्यं महदादि चतुर्विंशतितत्त्वं स्त्रीलिङ्ग पुल्लिङ्गरूपेण परस्परं मिथुनीभूय भवति। अत्यन्तमानन्दयति। अतएव वैकुण्ठादिशेषनागपर्यन्तं समस्तजीवजाति—देव-दैत्य-सिद्ध-गंधर्व-मुनि-यक्ष-तिर्यक्-

नाग-कीट-पतग-स्थावर-जंगम समस्त शिवशक्त्यात्मकं भवति इति सत्यम् । तस्मादेकाकी न रमते तद्वितीयमिच्छति । स एवात्मा द्विधाभवति पतिश्च पत्नीचेति श्रुतेः । अतश्च आत्म-व्यतिरेकेण आनन्दत्वं न संभवति कुत्रापि । जडपदार्थस्थूलसूक्ष्मकारणमवस्थात्रयं चैतन्यं केवलं ब्रह्म तुर्यावस्थामात्रं आनन्दः संभवति । अतएव आनंदो ब्रह्मेति सत्यम् ।। अतः परं—

ब्रह्मशब्द निर्णयः

माया शेषनागपर्यन्तं समस्तंप्रपञ्चान्वयरूपेण तिष्ठति । किमिव सूत्रेमणिगणा इव। यत्तस्माज्जगत ओतप्रोतं अधऊर्द्धवं मध्ये संपूर्णं देशकालवस्तुस्वरूपं समस्तप्रपञ्च गुणदोष-रहितं निर्लेपमच्छेद्यमभेद्यमदाह्यमक्लेद्यमशोष्यं समस्तेषु वस्तुषु अनुस्यूतमेकं समस्तानि वस्तूनि यन्नस्पृशन्ति, वियद्वत्, सदाशुद्धमेकं तत्स्वरूपं स नित्योपलब्धिस्वरूपोहमात्मेतिभावः। सदसत् संसारसत्यताप्रतिभासमानत्वात् । क इव, यथा रज्जुः सर्पइव, शुक्तिका रजतमिव, जले फेन इव, नभोऽभ्रमिव, कूटशब्देन मिथ्या माया प्रवर्तते । अतश्चाकाशवद्व्यापकः समस्तप्रपञ्चान्तर्यामित्वेन तिष्ठति । यत् सत्तायां जगत् सत्यता प्रतिभासमाना भवति । इति ऋग्वेद वाक्यत्रयपदार्थालोचनया काण्डत्रयम्-मन्त्रकाण्डम्-ज्ञानकाण्डम्-कर्मकाण्डं प्रतिभाति, तेन परमात्मा उल्लसति । पञ्चविंशतिसहस्राणि परब्रह्मवचांसि भवन्ति । विद्याशक्तियुक्ता परा-पश्यन्ती-मध्यमा-वैखरीरूपेणाव्यक्तस्वरूपं व्यक्तरूपेण प्रकटी करोति । प्रकृति-पुरुष संयोगेन परा वाक् अव्यक्तस्वरूपेण बुद्धिरहितं नादरहितं विन्दुरहितं केवलं चैतन्यमात्रंमुल्लसति, सैव वाक्—अन्तःकरणचतुष्टयात्मिका पुरुषसंयोगेन षड्ज-ऋषभ-मध्यम-पञ्चम-धैवत-निषाद-गान्धारात्मिका परारूपा भवति । पश्यन्ती विचारज्ञानमयपरापरज्ञानविचाराय उपकरोति, तेन विचारेण परब्रह्मप्राप्तिर्भवति । अपारसंसारमतीत्य सैव वाक् नादमयी पुरुषसंयोगेन मध्यमा वाचा नादमयी भवति । नादरूपेणोल्लसति, स नादः आत्मनः संयोगादग्निवायुभ्यो उत्पत्य द्वाविंशति श्रुतिरूपत्वेन हृत् उल्लसति ।

तथा चोक्तम्—

"नाकारं प्राणनामानं दकारमनिलं विदुः ।
जातः प्राणाग्निसंयोगात्तेननादोऽभिधीयते" ।।

स नादः श्रुतिद्वाविंशतिरूपेण सन् श्रुतिजनको भवति । श्रुतिभ्यश्च स्वराः । "षड्ज-ऋषभ-गान्धार-मध्यम-पंचम-धैवत-निषाद इति सप्तैते नानाप्रकाराः अव्यक्तनादोत्पादकाः" मध्यमा वाक् भवति । सैव वाक् पुरुषसंयोगेन वैखरीरूपेण अक्षरात्मिका भवति । तथा-चैतरेयारण्यके अकारो वै सर्वा वाक्, सैषा स्पर्शोष्माभिर्व्यञ्जमाना वह्वी नानारूपा भवति। अकारादयः षोडश स्वराः, ककारादयः पञ्चविंशतिस्पर्शाः, मकारादयो दशानुस्वाराः । अमुना-प्रकारेण परा । एवमकारेण सह द्विपञ्चाशद्वर्णवैखरीरूपेण वाच्यवाचकपदसमुदायात्मिका वाणी भवति । सैव वाक् शब्दब्रह्मेत्युच्यते । तथा चोक्तम्—

"शाब्देब्रह्मणि निष्णातः परंब्रह्माधिगच्छति" ।। इति ।

परंब्रह्मप्रतिपादकतया शब्दब्रह्मसत्यत्त्वं प्रतिपाद्यते । सा वैखरी वाक् भवति इति केषाञ्चि-न्मतेन ईश्वरव्यतिरेकेण सर्वज्ञस्य कर्तृत्वं अन्यस्य न संभवति तद्वयतिरिक्तस्य सर्वस्य जडत्वं प्रसज्यते । तथा च श्रुतिः—

स एव जीवो विवरप्रसूतिः प्राणेनयोगेन गुहां प्रविष्टः ।
मनोमयं सूक्ष्ममुपैतिरूपं मात्रा स्वरो वर्ण इति स्थविष्ठः ।। इति ।

ईश्वरस्य प्रथमश्वासनिर्गतः प्रथमः ऊँकार इति । स एवाकारादि षोडशस्वराः । ककारादि पञ्चविंशतिस्पर्शाः । मकारादिदशानुस्वाराश्च । प्रथमबीजरूपसहिता द्विपञ्चाशद्वर्णात्मिकावाणीभवति । तदनन्तच्छन्दोमयी भवति । "ऋग्वेदो यजुर्वेदः सामवेदोऽथर्वणः" इति चत्वारो वेदाः भवन्ति । एतेभ्य एव वेदेभ्यश्चतुर्दश विद्या भवन्ति । ताश्च—

"पुराणन्याय मीमांसा धर्मशास्त्राङ्गमिश्रिताः ।
वेदाः स्थानानि विद्यानां धर्मस्य च चतुर्दश" ।। इति ।

उपपुराणेतिहासोपवेद धनुर्वेद-आयुर्वेद-गान्धर्ववेद-मन्त्रवेद-शास्त्रैर्नानाप्रकाराश्चतुर्दश विद्या भवन्ति । ताश्च विद्याः । ब्रह्मा चतुभिर्मुखैश्चतुरोवेदान् निरन्तरमभ्यसति । पूर्वमुखेन ऋग्वेदम्, दक्षिणमुखेनाथर्वणवेदम्, उत्तरमुखेन यजुर्वेदम्, पश्चिममुखेन सामवेदम् । तत्सम्बधीनि अङ्गानि दर्शनानि । न्याय दर्शनं पूर्वमुखान्निर्गतम्, वेदान्तदर्शनं पश्चिममुखान्निर्गतम्, मीमांसादर्शनं दक्षिणमुखान्निर्गतम्, सांख्यपातञ्जलभाष्यदर्शनमुत्तरमुखान्निर्गतम् । एवञ्च षट्दर्शनेषु भगवतः स्वरूपं वासुदेवः, संकर्षणः, प्रद्युम्नोऽनिरुद्ध इति । चतुर्धा ब्रह्मप्रतिपाद्यते । तत्र सत्वगुणोत्पन्नानि, वासुदेवो देवता, ऋग्वेदो वेदः, सत्ययुगः, ब्राह्मणोवर्णः सात्विको गुणः, तपो निष्ठा, नैयायिकदर्शनस्यप्रामाण्यम्, प्रणवजपः केवलं ज्योतिर्मयं ध्यानम् । सर्वं खल्विदं ब्रह्मेति । ज्ञाननिष्ठाभेदाभेदौ नस्तः ।

"अहं ब्रह्मास्मि" इति यजुर्वेदवाक्यम् । तत्राहं शब्दः स्वस्वरूपाभिमानिनं वदति । अहं जगत्कर्ता, अहं जगत्साक्षी, अहं जगत्प्रेरकः, अहं जगद्भोक्ता, तथा च श्रुतौ—

"मयैव सकलं जातं मयि सर्वं प्रतिष्ठितम् ।
मयि सर्वं लयं याति तद्ब्रह्माद्वयमस्म्यहम्" ।। इति ।

वाक्य प्रामाण्यादहं शब्दः ब्रह्मारूढोभवति ।

"अहं सर्वस्य प्रभवो मत्तः सर्वं प्रवर्तते" ।

इति भगवद्वाक्यप्रामाण्यात् । अथवा—

"अहमेवासमेवाग्रे नान्यद्यत् सदसत्परम् ।
पश्चादहं यदेतच्च योवशिष्येत सोस्म्यहम्" ।।

सृष्ट्यादौ सृष्टिमध्ये सृष्टचन्ते नित्यत्वं प्रतिपाद्यते, इति भागवते । अतएवाहंशब्देन विशेषणज्ञानम् ।

"मयिसर्वमिदंप्रोतं सूत्रेमणिगणा इव" ।

इति उपनिषद्वाक्यप्रामाण्यात् । कथम्, स्वतश्चैतन्यत्वात् । यत्र स्वतश्चैतन्यं, तत्र स्वतः प्रकाशकत्वं स्वतन्त्रत्वम् । तत्रैवाहं शब्दः संभवति । अन्यत्र कुत्रापि न संभवति । तत्त्वेन मूलप्रकृत्यादि समस्तपदार्था जडा एव । अतएव मूलप्रकृतिः माया त्रिगुणात्मिका भवति । तदाऽऽत्मतत्वंचैतन्याभिमानीभवति । यदा अहमीश्वरः इति मन्यते तदाहं शब्दः प्रकृत्यारूढो भवति । सा यदा त्रिगुणात्मिका भवति । तदाऽहं शब्दात् त्रिगुणात्मको भवति । तत्र सत्वगुणात्मको विष्णुः अभिमानं करोति, रजोगुणात्मको ब्रह्मा अभिमानं करोति, तमो-

गुणात्मको रुद्रः अभिमानं करोति। वासुदेवरूपेण महत्तत्वादिकार्यमहंकाराभिमानं करोति। संकर्षणरूपेणाहंकारकार्यं मनोभिमानं करोति। प्रद्युम्नरूपेण मनःकार्यं बुद्ध्यभिमानं करोति, अनिरुद्धरूपेण तत्कार्यं पञ्चमहाभूताभिमानं करोति। देवतादिरूपेण तत्तत्कार्यं च शब्दादि विषयाभिमानं करोति। नादस्वरूपेण शब्दस्पर्शरूपेण रसगंधादिरूपेण तत्तत्कार्यं च ज्ञानेन्द्रियाभिमानं करोति। प्रकृतिरूपेणतत्तत्कार्यं च कर्मेन्द्रियाभिमानं करोति क्रियारूपेण। अतएव समस्त सदसदात्मकं जगत् स्थावर जंगम कीट पतङ्गाण्डज-स्वेदज-जरायुज-उद्भिज्ज समस्तजन्तूनां चतुरशीतिलक्षजीवानां पृथक् पृथक् जाति स्वभावेन जडाभिमानं जायते। तत्सर्वं ब्रह्मात्मकं भवति। ब्रह्मव्यतिरेकेण चैतन्यत्वं न संभवति। समस्तप्रपञ्चस्य जडत्वात्। अतएव ब्रह्माभिमानादन्याभिमानः कथं संभवति। अतश्च ब्रह्माभिमानं नित्यत्वं कथं संभवति

"अच्युतोहम्, अनन्तोऽहम्, गोविन्दोहमहं हरिः।
आनन्दोहमशेषोहमजोहममृतोस्म्यहम्"॥

निर्विकारोऽहम्, निर्विकल्पोऽहम्, निरञ्जनोऽहमित्यादि विशेषणेन विशेषितः सः परमात्मा। इत्यादि वाक्येनाहं शब्दः प्रमाणं भवति। यथेश्वराभिमानो न संभवति तथा कर्ता द्रष्टा ज्ञाता भोक्तेत्यपि न संभवति। जडत्वप्राप्तिस्तथाभिमानः कुत्रापि न संभवति। यथामातृकन्यायेन सच्चिदानन्दस्वरूपः परमात्मा कथ्यते। अत्र चत्वारो वेदाः प्रमाणम्। अहं शब्दो ब्रह्मवाचको भवति। अहं शब्दो मायाद्युपाधिरहितं व्यक्तस्वरूपोहमित्यभिमन्यते। अन्तःकरणरूपेण व्यक्ति करोति, परा-पश्यन्ती-मध्यमा-वैखरीरूपेण प्रकटी करोति। अहं शब्दो निर्णयात्परमात्मनो विशेषणं कथ्यते। अत्र प्रकृतिवादिनां मते अहं शब्दो ब्रह्मणि न संभवति। कथम्, ब्रह्म निर्गुणम्, शब्दस्तु सगुणः? अनयोः परस्परं विरोधः। तत्राहंकारशब्दे न संभवति। अहं शब्देनाभिमानलक्षणं मोक्षेच्छाबाधकरूपं ब्रह्मैक्यम्, प्रपञ्चस्त्वनेकधा। तत्र कथं पृथक् पृथक् अभिमानः संभवति, कथमहं शब्देन ब्रह्म संभवति इत्येकाशङ्का।

अथ द्वितीयाशङ्का-ब्रह्मएकम्, प्रपञ्चस्त्वनेकः, कथं पृथक् पृथक् अभिमानः संभवति ?

यथा अनन्तघटेष्वनन्तजीवाः सन्ति। केषाञ्चिदाचार्याणांमतेन-एतत्सत्यम्। यदि ब्रह्मण्यभिमानो नास्तीति चेत्तर्हि सर्वत्र जडत्वं प्राप्तम्। यत्र यत्र जडत्वं तत्र तत्राभिमानोऽपि नास्तीति। अतएव यत्र चैतन्यत्वं तत्रैवाभिमानित्वं संभवति। तत्र ब्रह्म चैतन्यस्वरूपमेव। अहं शब्दवाच्यं ब्रह्मैव संभवति। नान्यत्र कुत्रापि। इत्येका शङ्का परिहृता।

अथ ब्रह्म तदेकम्, प्रपञ्चस्त्वनेकः, कथं पृथक् पृथक् अभिमानः संभवति ? तत्र दृष्टान्तमाह—यथा सूर्यः एकः चक्षुरनेकः सत्प्रकाशं करोति। यथाग्निरेकः, उपाधिषु उष्णत्वम्। यथा एकश्चन्द्रः, ज्योत्स्ना अनेकाः। मृत्तिका एकैव, घटास्त्वनेकाः। अग्निरेकः, विस्फुलिङ्गास्त्वनेकाः। समुद्रएकः, तरङ्गा बुद्बुदाश्चानेकाः। इत्थममुनाप्रकारेण एकमेव ब्रह्म मायामयमनेकानेकमभिमानमुत्पादयति। यो देहाभिमानोत्पादकः परमात्माहं शब्दवाच्यः अनन्तशक्तिः अहंकारस्वरूपेण प्रपञ्चमनुप्रविशति "तत्सृष्ट्वातदेवानुप्राविशदितिश्रुतेः" सर्वं खल्विदं ब्रह्मेति श्रुतेश्वा। सा पूर्वाशङ्का परिहृतेति।

तस्मात् वृहत्वाद् ब्रह्म। अणु-वृहत्-कृश-स्थूलमित्यादयोधर्माः ब्रह्मण्येव वर्तन्ते। वृहत्वाच्च सर्वव्यापकत्वात् ब्रह्म प्रतिपाद्यते। आकाशवत्पूर्णमच्छेद्यमखण्डदण्डायमान

सर्वानुस्यूतं समो नागन समो मशकेन एभिस्त्रिभिर्लोकैरितिश्रुतेः, स्वप्रकाशात्मस्वरूपं समस्त प्रपञ्चगोचरतया प्रतिभाति । यतो वाचो निवर्तन्ते अप्राप्य मनसा सह इति श्रुतेः ।

केवलं साक्षिरूपं ब्रह्म जाग्रदवस्थासाक्षी, स्वप्नावस्थासाक्षी, सुषुप्त्यवस्थासाक्षी, पञ्चकर्मेन्द्रियसाक्षी, पञ्चज्ञानेन्द्रियसाक्षी, पञ्चतन्मात्रासाक्षी, पञ्चमहाभूतसाक्षी, अन्तःकरण चतुष्टयसाक्षी इति श्रुतेः । अतएव वासुदेव इति नाम । स च अनन्तकोटिब्रह्माण्डसाक्षिभूतः, अनन्तकोटिब्रह्माण्डपालकः, अनन्तकोटिब्रह्माण्ड संहर्ता वृहत्वात् ब्रह्मशब्दनोच्यते । अतएव ब्रह्मशब्देन सर्वानुस्यूतं ज्ञानमयं चैतन्यमुच्यते "अहमस्मि ब्रह्माहमस्मि" "ॐ तद्ब्रह्म" तत सत्यम् । यश्चायं पुरुषः यश्चासावादित्य एकैव तदिति विद्यात्" ।

"प्रज्ञा प्रतिष्ठा प्रज्ञानं ब्रह्म द्यौरन्तरिक्षेप्रतिष्ठिता अन्तरिक्षः पृथिव्यां, पृथिव्यां वायुः आपः

"सत्येन सात्रेण सत्यस्यापिहितं सुखम् ।"

यो सावादित्ये पुरुषः सोसावहम्" ।।

ॐ सत्यं खं ब्रह्म इति श्रुतिवाक्येभ्यः प्रसिद्धं ब्रह्मेत्युच्यते ।

"उदपारं ब्रह्मेति सार्कं साक्षी उपासते । हृदयं ब्रह्मेत्येव ब्रह्मा सैव तात्" इति श्रुतेः ।

अतएव केवलं शून्याच्छून्यंतरं शून्यं, सूक्ष्मात् सूक्ष्मतरं सूक्ष्मं, व्यापकात् व्यापकतरं व्यापकं, प्रकाशात् प्रकाशतरं प्रकाशं, ज्ञानात् ज्ञानतरं ज्ञानम्, नित्यान्नित्यतरं नित्यम्, ध्येयात् ध्येयतरं ध्येयम्, ईश्वरादीश्वरतरं ईश्वरम्, तत्त्वात्तत्त्वतरं तत्त्वम्, स्थूलात् स्थूलतरं स्थूलम्, आनन्दादानन्दतरमानन्दम्, सुखात् सुखतरं सुखम्, चैतन्यात् चैतन्यतरं चैतन्यम्, रूपाद्रूपतरंरूपम्, ज्योतिः परंज्योतिः, ज्योतिषामपि ज्योतिस्तमसः परमुच्यते इति स्मृतिवाक्येभ्यो ब्रह्म अनिर्वचनीयम् । तदिदं तादृशमीदृशमेतावत् तावदितिच यन्न भवेत् ब्रह्म तदित्यवधेयम् । नो चेद्विषयो भवेत् परोक्षं च शङ्कराचार्योक्तेश्च । वाङमनो गोचरातिग इत्यथर्वणवाक्यगतात्मशब्दनिर्णयेन काण्डत्रयम् (मन्त्रकाण्डम्, ज्ञानकाण्डम्, कर्मकाण्डं) ब्रह्मोपासनाय उपयुज्यते । परापश्यन्ती-मध्यमा-वैखरी रूपेण अव्यक्तमतिब्रह्मशब्दः ब्रह्मरूपेणात्मानमभिव्यनक्ति । तैत्तिरीयारण्यके, ऋग्वेदे च—

"न तं विदाथ य इमा जजानान्यद्युष्माकमन्तरं बभूव ।।
नीहारेण प्रावृता जल्प्याचासुतृप उक्थशासश्चरन्ति" ।। इति ।।
ब्रह्मानन्दे क्षुद्रानन्दादीनामन्तर्भूतत्वादिति श्रुतेश्चेत्यलम् ।
तस्मात् "प्रज्ञानमानन्दं ब्रह्म" इति सिद्धम् ।।

सिन्दूर–राग–विकिरणम्

मायाप्रसाद त्रिपाठी

(भूगोलानुसन्धान-च्छात्रः)

आकाशसिंहासनसंहृताङ्गः
सिन्दूररागं चलकेतनस्य ।
आकम्पयन् पश्चिम-दिग्विभागे
संयाति सूर्यो दिवसाङ्कपाल्याम् ॥१॥

पीतांशुकव्यायतनीलमार्गः
अलोककान्ति द्रुमराजिलग्नाम् ।
हेमस्य चूर्णं वसुधाञ्चले च
यात्रान्तप्राप्तः स हि वर्षतीव ॥२॥

समुद्वहन्तीं जलवीचिमालाम्
उद्वेजयन्नीलदुकूलिनीं ताम् ।
मरीचिसूत्रैस्तटिनीं सुहासाम्
बध्नाति रक्तैर्रशनाकलापैः ॥३॥

सौवर्णवर्णाः सिकताङ्कशोभाः
कृत्वा सहेलं द्युति-सङ्कुलाश्च ।
ध्यानस्थवेशो हरिदश्व एष
आभाति नूनं मुनिसन्निभश्रीः ॥४॥

वियोगगीतिं सुगुणानुवादम्
उच्चैर्विरावैरभिवन्दनञ्च ।
वृक्षाग्रनीडाङ्कसुखासनस्थाः
कुर्वन्ति राज्ञो मृदु पक्षियूथाः ॥५॥

हिमालयः स्वर्णकिरीटधारी
तुषारसौधे नतशीर्षभागः ।
पुष्पैर्विकीर्णैर्जलधारसक्तै-
रर्घ्यं विधत्ते गगनेश्वरस्य ॥६॥

व्यालम्बवस्त्रायतमूर्धदेशा
वेलानिलैश्चालितगात्रयष्टिः ।
चञ्चत्तरङ्गेष्वियमम्भसो नौः
संयाति हर्म्यं नु दिवाकरस्य ॥७॥

यानस्थपान्थः कलकण्ठगानैः
सन्ध्यां हि सुस्थो मुखरीकरोति ।
तोयस्थविम्बं कमलेश्वरस्य
नौका नु चैषा परिमार्जयन्ती ॥८॥

पद्मं गता विस्मितचारुनेत्रा
व्याकुण्ठिता संप्रति नीरलक्ष्मीः ।
एकाकिनी साध्वसजातखेदा
ध्वान्तं समासाद्य विलासिनीव ॥९॥

दिने भ्रमन्त्यान्तिमभूमिभागे
ग्रामं प्रपन्नानि च गोकुलानि ।
वंशीसमाकुञ्चितहस्तगोपाः
आयान्ति सञ्चारितरम्यरागाः॥१०॥

सीमान्तदेशा निभृताङ्गचेष्टाः
शालीक्षुकायाः प्रियशाद्वलाङ्गाः ।
पश्यन्ति मुग्धा हरिताम्बराश्च
पङ्क्तिंविधाय प्रसृतोर्ध्वकण्ठाः ॥११॥

चित्रं विचित्रं रुचिरञ्जितं यद्
विलीयते दीधितिकर्षणैस्तद् ।
दृश्यं यथा चित्रपटान्तनद्धम्
अन्तर्दधाति प्रतिरुद्धदीप्ति ॥१२॥

अश्वेतपर्णिनिविडान्धकारः
कालातपत्रः सुखमुक्तबन्धः ।
स्वैरं विहारी वसुधाङ्कमध्ये
आविष्करोति प्रतिमां स्वकीयाम् ॥१३॥

ब्रह्माण्डदीर्घं पटलं हि तस्य
तत्वान्ततुल्यं गतिमन्थरं तत्
विन्यस्तवर्णास्फुटलेखकीर्णम्
भातीव गुप्ता नरभाग्यपङ्क्तिः ॥१४॥

चन्द्राननं वीक्ष्य निशाङ्गनाया
आरूढमौग्ध्यं नवभर्तृकायाः ।
तारासु कृत्वा स्वसखीसुमौलिम्
अन्तदर्धे मौनविनीतसन्ध्या ॥१५॥

नागरी टङ्कण-यन्त्र

लक्ष्मीशंकर गुप्त

शोधसहकारी, हिन्दी विभाग

इन पङ्क्तियों के लेखक को हिन्दू विश्वविद्यालय से प्रकाशित 'प्रज्ञा' (सप्तम खण्ड, १९६२) का अवलोकन करने का सुअवसर प्राप्त हुआ। इस पत्रिका में आर्ट्स कालेज के प्रधानाचार्य विद्वद्वर डॉक्टर ब्रजमोहन का एक निबन्ध दिखाई पड़ा जिसमें हिन्दी टङ्कण-यन्त्र के कुंजी-पटल (The Key-Board of Hindi Typewriter) के विषय में विस्तृत विवेचन किया गया है और हिन्दी टङ्कण-यन्त्र को पूर्णता की ओर अग्रसर करने के लिए प्रभूत और अभिनव सामग्री प्रस्तुत की गई है। विद्वान् लेखक के उक्त निबन्ध को मैंने ध्यानपूर्वक पढ़ा और मेरे मन में इस विषय से सम्बन्धित कुछ विचार उठे जिन्हें मैं विचारशील पाठकों की सेवा में उपस्थित करना चाहता हू।

विद्वान् लेखक ने 'हिन्दी' टङ्कण-यन्त्र के कुंजी-पटल के विषय में विचार किया है। मेरा विचार यह है कि लेखक को 'नागरी' टङ्कण-यन्त्र के कुंजी-पटल के विषय में विचार करना चाहिए न कि, 'हिन्दी' टङ्कण यन्त्र के कुंजी-पटल के विषय में। हिन्दी टङ्कण-यन्त्र के कुंजी-पटल के विषय में विचार करने से लेखक का विचार-क्षेत्र कुछ संकुचित हो जाता है। हिन्दी भाषा जिस लिपि में लिखी जाती है उसमें कुछ अन्य भाषाएँ भी लिखी जाती हैं, जैसे मराठी, राजस्थानी और संस्कृत; तथा कुछ मृत भाषाएँ भी जैसे पालि, प्राकृत आदि। यह लिपि जिसमें उक्त भाषाएँ लिखी जाती हैं नागरी कहलाती है। अतः लेखक को नागरी लिपि के टङ्कण-यन्त्र के विषय में विचार करना चाहिए जिससे यह यन्त्र उक्त लिपि में लिखी जाने वाली सभी भाषाओं के लिए व्यवहार्य हो। मुझे ऐसा कहने की आवश्यकता निम्न कारणों से पड़ी:—

(१) अन्वेषकों और लेखकों को संस्कृत, पालि आदि भाषाओं तथा डिंगल आदि बोलियों से सदैव काम पड़ा करता है।

(२) इन भाषाओं और बोलियों में कुछ ऐसे अलग-अलग संकेत हैं जो केवल उन्हीं में चलते हैं जैसे संस्कृत में 'ऽ'अथवा राजस्थानी में 'क'।

(३) कुछ ऐसे अक्षर हैं जिनका विभिन्न स्थानों में विभिन्न उच्चारण है। अतः उन्हें कदापि नहीं हटाया जा सकता; उदाहरणार्थ 'ज्ञ' का उच्चारण उत्तर प्रदेश के पूर्वी अञ्चल में 'ग्य' अथवा 'ग्यँ' मराठी में 'द्यँ' तथा अन्यत्र 'ज्ञ' है। इसे हटाने से विभिन्न क्षेत्रों में शब्दों की एकरूपता समाप्त हो जायगी।

(४) यह टङ्कण-यन्त्र ऐसा बने कि नागरी लिपि में लिखी जाने वाली सभी भाषाओं तथा बोलियों के लिए उपयुक्त हो।

अब विद्वान् लेखक ने कुंजी-पटल के विषय में जो विचार किया है, उस विषय में भी मुझे कुछ कहना है। इसके पूर्व मैं निवेदन कर देना चाहता हूँ कि मैं नागरी कुंजी-

पटल को दृष्टि में रख कर विचार कर रहा हूँ। लेखक ने जितने सङ्कतों को इस यन्त्र में सम्मिलत करने की योजना बनाई है वे स्वयं चालित खड़ी पाई की कुंजी तथा अर्द्धाक्षरों के प्रयोग के कारण इतने अधिक हैं कि यह यन्त्र नागरी यन्त्र के समीप पहुँच जाता है और प्रायः सभी आवश्यक चिह्न भी सम्मिलित हो जाते हैं। फिर भी कुछ आवश्यक सङ्केत छूट जाते हैं। इनमें पहला सङ्केत है संस्कृत का 'ऽ' तथा दूसरा सङ्केत है राजस्थानी का 'ळ'। इनको सम्मिलित करने के लिए एक कुंजी फँसानी पड़ेगी। नागरी यन्त्र में इनका होना कितना आवश्यक है, इसे विद्वान् पाठक स्वयं समझ सकते हैं। संस्कृत और राजस्थानी में पदे-पदे इनकी आवश्कता पड़ती है।

अब प्रश्न होगा कि ४६ ही कुंजियों में इन्हें भी किस प्रकार स्थान दिया जाय। मैंने कुल और दो सङ्केतों को सम्मिलित करने की संस्तुति की है। इसके लिए एक कुंजी कहाँ से लाई जाय।

मेरा विचार यह है कि दुहरा उद्धरण चिह्न ("....") निकाल दिया जाय। इसके स्थान पर इकहरे उद्धरण-चिह्न से काम चल सकता है। अधिक आवश्यकता होने पर इसी को दो बार छाप कर दुहरा उद्धरण-चिह्न भी बनाया जा सकता है। अधोरेखित करने का काम वेलन कुछ ऊपर घुमाकर ऋण चिह्न (—) से लिया जा सकता है। इससे टङ्कण की गति में कुछ कमी तो अवश्य हो जायगी, किन्तु विवश होकर ऐसा करना ही पड़ेगा। इस प्रकार दुहरे उद्धरण तथा अधोरेखक चिह्न (—) के निकाल देने से जो एक कुंजी खाली होगी उसमें 'ऽ' तथा 'ळ' को स्थान दिया जा सकता है।

खड़ीपाई (।) छाप कर और बेलन कुछ पीछे हटाकर ऋण-चिह्न छापने से धन-चिह्न (+), तथा ऋण-चिह्न और विसर्ग की सहायता से इसी प्रकार भाग-चिह्न (÷) बनाए जा सकते हैं तथा उनके स्थान पर 'क्ष' तथा 'त्र' सम्मिलित किये जा सकते हैं जिन्हें लेखक ने निकाल देने की सम्मति दी है। 'ज्ञ' का रहना क्यों आवश्यक है इस विषय में मैं पहले ही निवेदन कर चुका हूँ। धन तथा भाग-चिह्नों की टङ्कण में अधिक आवश्यकता भी नहीं पड़ती, अतः गति में भी अधिक ह्रास नहीं होगा।

खड़ी पाई वाले अक्षरों में नीचे लगने वाले 'र्' के लिए (जैसे क्र, प्र आदि लिखने के लिए) लेखक ने '्र' ऐसे चिह्न का प्रयोग करने की सम्मति दी है। इससे 'क्र' का रूप 'क्र' ऐसा हो जायगा। इससे अक्षर विरूप तो होंगेही 'क्रा, पढ़ा जाने का भी भ्रम सम्भव है। मेरी सम्मति है कि इस हेतु '‸' ऐसे चिह्न का प्रयोग किया जाय और इसकी कुंजी अचल हो। इसका लम्ब भाग 'क', 'प' आदि अक्षरों की खड़ी पाई में छिप जायगा और 'ट', 'ड', 'द' आदि में वह 'ट्र', 'ड्र', 'द्र' जैसा आयगा। यही 'हंसपद' (caret sign) का भी काम दे जायगा और इसके स्थान पर 'श्र' को सम्मिलित किया जा सकता है। लेखक ने 'श्र' के स्थान पर 'श्र' का प्रयोग करने का सुझाव दिया है। यह अशुद्ध नहीं है, किन्तु इससे नागरी की 'श्री' ही समाप्त हो जायगी। यदि 'श्र' को निकाल देना ही ठीक समझा जाय तो इसके स्थान पर **'करणी चिह्न'** (√) को स्थान दिया जा सकता है जिसकी व्याकरण, भाषा-विज्ञान तथा गणित में बहुत आवश्यकता पड़ती है।

लेखक ने प्रतिशत चिह्न (%) को भी सम्मिलित किया है। मेरी समझ में विसर्ग चिह्न (:) छापने के बाद बेलन पीछे हटाकर तिरछी पाई (/solidus) छापकर इसे बनाया जा सकता है। इससे यह चिह्न कुछ विरूप अवश्य हो जायगा क्योंकि विसर्ग के विन्दुओं में बीच में खाली स्थान नहीं होता, किन्तु इससे कोई अशुद्धि नहीं आने पायगी। हाथ से लिखते समय प्रतिशत चिह्न बनाने में विन्दुओं का ही प्रयोग होता है, शून्यों का प्रयोग क्वचित् ही होता होगा। इस चिह्न के स्थान पर '>' यह चिह्न रखा जा सकता है जिससे गणित तथा भाषा विज्ञान में बहुत काम लिया जाता है।

लेखक ने सुझाव दिया है कि शून्य (०) तथा 'आ' की मात्रा (ा) से 'व' बनाया जा सकता है। हाँ, काम तो चलाया जा सकता है, परन्तु '०' के ऊपर बेड़ी पाई नहीं है, अतः इसके बाद आ की मात्रा लगाने से माथे की बेड़ी पाई बाईं ओर कुछ छोटी पड़ेगी जिससे कुछ वैरूप्य आ जायगा और यदि 'व' अक्षर किसी शब्द के वीच में पड़ा, तो बीच में माथे की रेखा कुछ छूट जायगी।

अन्त में मैं नागरी प्रेमियों का ध्यान श्रद्धेय डॉक्टर साहब के विचार-सङ्कुल निवन्ध की ओर आकृष्ट करता हूँ कि वे पुनः इस निवन्ध को पढ़ कर मनन करें और विचार करें कि इस विधि से प्रस्तुत नागरी टङ्कण यन्त्र कितनी पूर्णता प्राप्त कर सकता है।

प्राचीन भारतीय न्याय-व्यवस्था

सत्यनारायण पाण्डेय

शोधसहकारी, भारती महाविद्यालय

वैदिक-कालीन न्यायप्रणाली का सुस्पष्ट विवरण नहीं मिलता। इस युग में राज्य का क्षेत्रफल छोटा था, अतः न्याय और सुरक्षा आदि समग्र शासकीय कृत्यों का सम्पादन राजा स्वयं कर लेता था। परवर्ती काल में राज्य-सीमा के विस्तार के साथ-साथ जब राज्य-कार्य बढ़ते गये तो इनकी सम्यक् व्यवस्था के लिए राजा को सहायकों की आवश्यकता हुई और सम्भवतः ब्राह्मण-काल तक न्याय-विभाग शासकीय सुरक्षा-विभाग से पृथक् हो गया।

परवर्ती काल में न्याय-व्यवस्था पर प्रकाश डालने वाले प्रमुख ग्रन्थ कौटिलीय 'अर्थ-शास्त्र', 'मनुस्मृति', 'याज्ञवल्क्य स्मृति', 'नारद स्मृति' तथा 'शुक्रनीतिसार' आदि हैं। इन ग्रन्थों में धर्माध्यक्ष की योग्यता, न्याय-सभा का संगठन, विवेच्य-विषय, कार्यपद्धति, साक्ष्य एवं साक्षी की योग्यता तथा निर्णय सुनाने के ढंग आदि का सविस्तार वर्णन किया गया है।

धर्माध्यक्ष—राज्य-शास्त्र के ग्रन्थों में सभा के अध्यक्ष को धर्माध्यक्ष या प्राड्विवाक् कहा गया है। इस पद पर राजा स्वयं आसीन होता था। मनुस्मृति में न्याय के लिए मन्त्रियों और ब्राह्मणों के साथ राजा का सभा में प्रवेश करने का वर्णन है[1]। याज्ञवल्क्य ने भी राजा को ही व्यवहार-दर्शन की अनुमति दी है[2]। जब राजा स्वयं न्याय-कार्य न करता था, उस समय वह वेद के पारंगत किसी ब्राह्मण को निर्णायक नियुक्त करता था[3]। विद्वान् ब्राह्मण सुलभ न होने पर राजा धर्मशास्त्रवेत्ता किसी क्षत्रिय या वैश्य को अपना प्रतिनिधि नियुक्त कर सकता था पर शूद्र को नहीं[4]। स्वयं मनु का भी कथन है कि जिस-जिस राजा का धर्म-विवेचन शूद्र करता है उसका राष्ट्र कीचड़ में फँसी गाय की भाँति देखते-देखते ही नष्ट हो जाता है[5]।

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[1] व्यवहारान्दिदृक्षुस्तु ब्राह्मणैः सह पार्थिवः।
मन्त्रज्ञैर्मन्त्रिभिश्चैव विनीतः प्रविशेत् सभाम्॥ मनु ८, १

[2] व्यवहारान्स्वयं पश्येत्सभ्यैः परिवृतोऽन्वहम्।

[3] यदा स्वयं न कुर्यात्तु नृपतिः कार्यदर्शनम्।
तदा नियुज्याद्विद्वासं ब्राह्मणं कार्यदर्शने॥ मनु० ८, ९
यदा न कुर्यान्नृपतिः स्वयं कार्यविनिर्णयम्।
तदा तत्र नियुञ्जीत ब्राह्मणं वेदपारगम्॥ शुक्र० ४, ५३५

[4] यत्र विप्रो न विद्वान्स्यात्क्षत्रियं तत्र योजयेत्।
वैश्यं वा धर्मशास्त्रज्ञं शूद्रं यत्नेन वर्जयेत्॥
कात्या० मनु० ८, २० की टीका में कुल्लूकभट्ट द्वारा उद्धृत।

[5] यस्य शूद्रस्तु कुरुते राज्ञो धर्मविवेचनम्।
तस्य सीदति तद्राष्ट्रं पंके गौरिव पश्यतः॥ मनु० ८, २१

सभा—प्रजा वर्ग के विवादपूर्ण विषयों का निर्णय एवं उनके अनैतिक कृत्यों का दण्ड-निर्धारण सभा द्वारा होता था। यह सभा वैदिक काल की सभा से भिन्न थी। कुल्लूकभट के शब्दों में तेज या प्रकाश से युक्त विद्वानों के समुदाय की संज्ञा सभा थी [१]।

सभा में कितने सदस्य होते थे इसकी निश्चित संख्या ज्ञात नहीं है। बृहस्पति के अनुसार लोक वेद और धर्मशास्त्र को जानने वाले सात, पाँच या तीन व्यक्तियों से भी सभा का संगठन हो सकता था [२], परन्तु मनुस्मृति से ज्ञात होता है कि इसमें तीन ही सदस्य होते थे [3]। याज्ञवल्क्य ने धर्म का विधान करने वाली सभा के लिए पर्षत् शब्द का प्रयोग किया है। इसमें वेदों के विशेषज्ञ चार सदस्य रहते थे। अध्यात्मवेत्ता एक व्यक्ति भी जिस अनुभूत सत्य को कहता था उसे धर्म माना जाता था।[४]

भारतीय राज्य-शास्त्रकारों ने धर्म शब्द का प्रयोग न्याय के पर्याय रूप में किया है। मनु ने न्याय व्यवस्था को धर्म की संज्ञा दी है।[५] शान्तिपर्व का 'धर्म' भी जो राजा एवं राज्य तथा दण्ड और दाण्डिक के अभाव में भी जन सामान्य का संरक्षक कहा गया है न्याय का पर्यायवाची है।[६] अतः धर्म का विवेचन करने वाली याज्ञवल्क्य की 'पर्षत्' को भी यदि सभा मान लिया जाय तो इसके संगठन में एक से लेकर सात सदस्यों का ज्ञान होता है।

सभा के सदस्यों की योग्यता—मीमांसा एवं व्याकरण आदि शास्त्रों के श्रोता तथा वेदों के अध्ययन में विशेष योग्यता रखने वाले, धर्मशास्त्रज्ञ सत्यवक्ता ही सभासद नियुक्त किये जाते थे।[७] मिताक्षराकार विज्ञानेश्वर के मत से उपरोक्त सभासद ब्राह्मण जाति के ही होते थे। इसके लिए उन्होंने उक्त श्लोक की टीका में कात्यायन और बृहस्पति द्वारा निर्दिष्ट सभासदों की योग्यता का उल्लेख किया है। कात्यायन ने स्थिरचित्त वाले उन ब्राह्मणों को ही सभासद बनने की अनुमति प्रदान की है जो धर्मशास्त्र और अर्थशास्त्र के विशेषज्ञ होते थे।[८] बृहस्पति ने भी उस सभा को यज्ञ के समान बतलाया है जिसमें लोक

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[१] भा : प्रकाशस्तया सह वर्तते इति विद्वत्संहतिरेव सभा शब्देन अभिहिता। कुल्लूकभट्ट द्वारा मनु० ८, १२ की टीका में उद्धृत।

[२] लोकवेदधर्मज्ञः सप्त पञ्च त्रयोऽपि वा॥ बृह० स्मृति च० २, पृ० १५ में उद्धृत।

[3] सोऽस्य कार्याणि संपश्येत्सभ्यैरेव त्रिभिर्वृतः॥ मनु० ८, १०

[४] चत्वारो वेदधर्मज्ञाः पर्षत्त्रैविद्यमेव वा।
सा ब्रूते यं स धर्मः स्यदेको वाध्यात्मवित्तमः॥ याज्ञ० १, ९

[५] 'धर्मो विद्धस्त्वधर्मेण' मनु० ८, १२

[६] न वै राज्यं न राजासीन्न दण्डो न च दाण्डिकः।
धर्मेणैव प्रजाः सर्वा रक्षन्ति स्म परस्परम्॥ शान्ति पर्व ५९, १४

[७] श्रुताध्ययनसम्पन्ना धर्मज्ञाः सत्यवादिनः।
राज्ञा सभासदः कार्या रिपौ मित्रे च ये समाः॥ याज्ञ० २, २

[८] स तु सभ्यैः स्थिरैर्युक्तः प्राज्ञैर्मौलैर्द्विजोत्तमैः।
धर्मशास्त्रार्थकुशलैरर्थशास्त्रविशारदैः॥ याज्ञ० २, ३

वेद और धर्मशास्त्रों के व्यवहार को जानने वाले ब्राह्मण रहते हैं।[1] मोटे तौर पर यही कहा जा सकता है कि सभा के सभी सदस्य लोक-व्यवहार तथा विधि-नियमों के जानने वाले वेदज्ञ ब्राह्मण ही होते थे।

सभा का विवेच्य विषय—सभा उन समग्र व्यवहारों का निर्णय करती थी जिनकी सूचना अभियोक्ता उसे देता था। धर्मशास्त्रों द्वारा प्रतिपादित सार्वजनीन मार्ग के विरुद्ध आचरण करने वाले अभियुक्त से अभिभूत होकर अभियोक्ता राजा के समीप जो कुछ निवेदन करता था स्मृतियों में उसे व्यवहार का विषय माना गया है।[2] नारदस्मृति में अभियोगों के समग्र भेदों को प्रथमतः शंकाभियोग और तत्वाभियोग इन दो वर्गों में विभक्त किया गया है। शंकाभियोग में दुष्टों के संसर्ग से उत्पन्न वाग्पारुष्यादि दोषों की तथा तत्वाभियोग में चौर्य-धन आदि से सम्बन्धित अभियोगों की गणना की जाती थी।[3]

उक्त श्लोक की टीका में प्रतिषेधात्मक और विध्यात्मक भेद से तत्वाभियोग के पुनः दो भेद और बताए गये हैं; उदाहरणतः कोई व्यक्ति किसी से सुवर्ण आदि लेकर उसे न लौटाता हो और कोई किसी के क्षेत्र आदि स्थायी सम्पत्ति का ही अपहरण करता हो। मनु० ८, ४–७ से ज्ञात होता है कि सभा में विचार किये जाने वाले विवादपूर्ण विषयों की ऋणादान, निक्षेप, अस्वामिविक्रय, सम्भूय-समुत्थान आदि अठारह संख्या थी।[4] मनुष्यों के दुष्कृत्यों की कोई निश्चित संख्या निर्धारित नहीं की जा सकती। इसीलिए नारद ने व्यवहार के विषयों का १०८ भेद बताने के बाद भी उसे शतशाख कहा है।[5]

सभा की कार्य पद्धति—सभा में व्यवहार पद के विवरण (कारवाई) को लिख लिया जाता था। आवेदन के समय पहले आवेदक के कार्य मात्र को लिख लिया जाता था।

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[1] लोकवेदधर्मज्ञाः सप्त पञ्च त्रयोऽपि वा।
यत्रोपविष्टा विप्राः स्युः सा यज्ञसदृशी सभा ॥ याज्ञ० २, ४

[2] स्मृत्याचारव्यपेतेन मार्गेणाधर्षितः परैः।
आवेदयति चेद्राज्ञे व्यवहारपदं हि तत् ॥ याज्ञ० २, ५

[3] द्व्यभियोगस्तु विज्ञेयः शंकातत्वाभियोगतः।
शंका सतां तु संसर्गात्तत्वं होढाभिदर्शनात् ॥ याज्ञ० २, ५ की मिताक्षरा।

[4] तेषामाद्यमृणादानं निक्षेपोऽस्वामिविक्रयः।
संभूय च समुत्थानं दत्तस्यानपकर्म च ॥
वेतनस्यैव चादानं संविदश्च व्यतिक्रमः।
क्रयविक्रयानुशयो विवादः स्वामिपालयोः ॥
सीमाविवादधर्मश्च पारुष्ये दण्डवाचिके।
स्तेयं च साहसं चैव स्त्रीसंग्रहणमेव च ॥
स्त्रीपुंधर्मो विभागश्च द्यूतमाह्वय एव च।
पदान्यष्टादशैतानि व्यवहारस्थिताविह ॥ मनु० ८, ४–७ ॥

[5] एषामेव प्रभेदोऽन्यो शतमष्टोत्तरं भवेत्।
क्रियाभेदान्मनुष्याणां शतशाखो निगद्यते ॥ याज्ञ० २, ५ की टीका में उद्धृत ॥

पुनः अभियोक्ता और अभियुक्त दोनों को एक निश्चित तिथि पर सभा के समक्ष बुलाया जाता था। अब अर्थी जो कुछ भी कहता उसे प्रत्यर्थी के समक्ष ही लिखा जाता था। इस लेख में वर्ष, मास, पक्ष, तिथि, अर्थी-प्रत्यर्थी के नाम एवं जाति आदि का उल्लेख रहता था।[1] इसके बाद प्रत्यर्थी जो कुछ उत्तर देता था उसे भी आवेदक के समक्ष ही लिख लिया जाता था। अर्थी के लिए यह आवश्यक था कि प्रत्यर्थी के उत्तर को अयथार्थ सिद्ध करने के लिए किसी व्यक्ति को साक्षी बनावे। अर्थी जिस साक्षी का उल्लेख करता था उसे भी न्यायालय में लिखा जाता था।[2] उपर्युक्त वादी-प्रतिवादी और दोनों के कथन में अनुगत सत्यांश के आधार पर राजा निर्णय करता था। इस प्रकार सभा की कार्य-पद्धति में साधारणतया चार क्रम होते थे। नारद ने उपरोक्त चारो क्रमों के लिए आगम, व्यवहारपद, चिकित्सा और निर्णय शब्द का प्रयोग किया है।[3] शुक्र ने भी सभा की कार्य-पद्धति के लिए पूर्वपक्ष, उत्तरपक्ष, क्रियापद और निर्णय इन चार चरणों का उल्लेख किया है।[4]

साक्षी की योग्यता – साक्षी वही हो सकता था जिसने विवाद के विषय को स्वयं देखा-सुना हो[5]। साक्षी से यह आशा की जाती थी कि वह सत्य-वक्ता होगा। शुक्र ने उसे सर्वश्रेष्ठ साक्षी माना है जो प्रत्यक्ष देखी बात को सत्य-सत्य कह दे[6]। मनु का कथन है कि सत्य साक्ष्य भरने वाला व्यक्ति पूर्व जन्म के पापों से मुक्त हो जाता है और उसके धर्म की वृद्धि होती है। अतः प्रत्येक वर्णों के साक्ष्य में व्यक्ति को सदा सत्य बोलना चाहिए[7]। सत्यवक्ता उसी व्यक्ति के साक्ष्य को प्रामाणिक माना जाता था जो आप्त, सब धर्मों का ज्ञाता एवं लोभशून्य होता था[8]। बाल, वृद्ध, विकलेन्द्रिय, आर्त्त, मत्त, क्षुधा और तृष्णा से पीड़ित, श्रमार्त्त, कामार्त्त, क्रोधी और चोर यदि सत्य भी कहते तो इनके साक्ष्य को प्रामा-

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[1] प्रत्यर्थिनोऽग्रतो लेख्यं यथावेदितमर्थिना।
समामासतदर्धाहर्नामजात्यादिचिह्नितम्॥ याज्ञ० २, ६॥

[2] श्रुतार्थस्योत्तरं लेख्यं पूर्वावेदकसन्निधौ।
ततोऽर्थी लेखयेत्सद्यः प्रतिज्ञातार्थसाधनम्॥ याज्ञ० २, ७॥

[3] आगमः प्रथमं कार्यो व्यवहारपदं ततः।
चिकित्सा निर्णयश्चैव दर्शनं स्याच्चतुर्विधम्॥ नारद स्मृति १, ३६

[4] पूर्वपक्षः स्मृतः पादो द्वितीयश्चोत्तरात्मकः।
क्रियापादस्तृतीयस्तु चतुर्थो निर्णयाभिधः॥ शुक्र० ४, ६७२॥

[5] समक्षदर्शनात्साक्ष्यं श्रवणाच्चैव सिद्धयति। मनु० ८, ७४॥

[6] अनुभूतः सत्यवाग्यः सकः साक्षित्वमर्हति।
उभयानुमतः साक्षी भवत्येकोऽपि धर्मवित्॥ शुक्र० ४, ७०२॥

[7] सत्येन पूयते साक्षी धर्मः सत्येन वर्द्धते।
तस्मात्सत्यं हि वक्तव्यं सर्ववर्णेषु साक्षिभिः॥ मनु ८, ८३॥

[8] आप्ताः सर्वेषु वर्णेषु कार्याः कार्येषु साक्षिणः।
सर्वधर्मविदो लुब्धा विपरीतांस्तु वर्जयेत्॥ मनु० ८, ६३॥

णिक नहीं माना जाता था, क्योंकि प्राचीन स्मृतिकारों ने इन्हें साक्षी की श्रेणी से पृथक कर दिया था।[१]

निर्णय—अभियोक्ता और अभियुक्त के विसंवादों का निर्णय लेख्य और साक्षी के आधार पर किया जाता था। महाभारत से ज्ञात होता है कि निर्णय करते समय साक्षि, भुक्ति और लिखित इन तीन प्रमाणों, तर्क, लोक-चरित, शपथ, राजाज्ञा और वादी की सम्प्रतिपत्ति का सहारा लिया जाता था[२]।

कौटिल्य ने अपने अर्थशास्त्र में, व्यवहार, चरित्र और राजाज्ञा के आधार पर निर्णय देने का संकेत किया है और इन चारो में भी क्रमशः प्रथम से तदनन्तर के न्यायपाद को अधिक मान्य बतलाया है[3]।

वस्तुतः ऐतिहासिक दृष्टि से वैदिककाल से ब्राह्मणयुग तक धर्मानुसार न्याय-व्यवस्था का ही दर्शन होता है। अतः न्यायाधीश अभियुक्त और अभियोक्ता के स्वपक्ष स्थापन में अनुगत सत्यांश के आधार पर ही निर्णय करता था[४]।

उनके भ्रामक कथनों से सत्यांश के दुरधिगम्य हो जाने पर निर्णय के लिए व्यवहार का परिज्ञान आवश्यक था। इसलिए निर्णय में उभयपक्ष से प्रस्तुत किये गये साक्ष्यों का आश्रय लिया जाता था[५]।

व्यवहार की अस्पष्टता के कारण निर्णय सम्भव न होने पर न्यायाधीश चरित्र-संग्रह का आश्रय[६] लेता था। चरित्र-संग्रह से कौटिल्य का तात्पर्य सम्भवतः उन नियमों से था, जिनका प्रयोग कभी पूर्व सूरियों ने न्याय, निर्णय के प्रसंग में किया हो। इसका अविशिष्ट रूप आज की न्याय परम्परा में भी परिलक्षित होता है। वकील लोग आज भी निर्णय को अपने पक्ष में लाने के लिए न्यायाधीश का ध्यान उस विधि की ओर आकर्षित करते

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[१] नाध्यधीनो न वक्तव्यो न दस्युर्न विकर्मकृत्।
न वृद्धो न शिशुर्नैको नान्त्यो न विकलेन्द्रियः॥
नार्त्तो न मत्तो नोन्मत्तो न क्षुत्तृष्णोपपीडितः।
न श्रमार्त्तो न कामार्त्तो न क्रुद्धो नापि तस्करः॥ मनु० ८, ६६, ६७॥
स्त्रीबालवृद्धकितवमत्तोन्मत्ताभिशस्तकाः।
रंगावतारिपाखण्डिकूटकृद्विकलेन्द्रियाः॥
पतिताप्तार्थसम्बन्धिसहायरिपुतस्कराः।
साहसी दृष्टदोषश्च निर्धूताद्यास्त्वसाक्षिणः॥ याज्ञ० २, ७०, ७१॥

[२] प्रमाणैर्हेतुचरितैः शपथेन नृपाज्ञया।
वादिसम्प्रतिपत्त्या वा निर्णयोऽष्टविधः स्मृतः॥ महाभारत॥

[3] धर्मश्च व्यवहारश्च चरित्रं राजशासनम्।
विवादार्थश्चतुष्पादः पश्चिमः पूर्वबाधकः॥ कौटि० ३, ५१॥

[४] तत्र सत्ये स्थितो धर्मः। कौटि० ३।५२

[५] व्यवहारस्तु साक्षिषु। ,, ३।५२

[६] चरित्रं संग्रहे पुंसां ,, ३।५२

हैं, जिनका प्रयोग दस या बीस वर्ष पूर्व किसी अन्य न्यायाधीश ने ऐसे ही अभियोग के निर्णय में किया था। कौटिल्य के मत से निर्णय-विधि में राज-शासन का महत्त्व सर्वंकष था[1]।

शान्तिपर्व में भीष्म ने भी राज-शासन के इसी महत्त्व को अभिव्यंजित करने के लिए निर्णय के समग्र उपकरण लेख्य, भुक्ति और साक्षी आदि के अभाव में राजा को ही आप्त मान लिया था[2]।

अभियोग का निर्णय कर लेने के पश्चात् सभा धर्माध्यक्ष से निर्णय सुनाने को कहती थी और वह अपना दाहिना हाथ उठाकर न्याय सुनाता था[3]।

अन्त में निर्णय सुनाने के अनन्तर विजेता को जयपत्र दे दिया जाता था। याज्ञव० २।९१ की व्याख्या में विज्ञानेश्वर ने विजेता को जयपत्र देने का उल्लेख किया है। राजा इस पर अपना हस्ताक्षर और राजकीय मुद्रा भी अंकित करता था[4]।

वृद्धवशिष्ठ के कथन से भी ज्ञात होता है कि प्राड्विवाक् के हस्ताक्षर और राजमुद्रा से अंकित जयपत्र विजेता को दिया जाता था[5]।

इसके पश्चात् राजा पराजित व्यक्ति को दण्ड देता था। सम्पत्ति विषयक अभियोग में पराजित व्यक्ति धर्माध्यक्ष द्वारा निर्णीत धनराशि विजेता को देता था। उसे अपनी शक्ति के अनुसार शासन के लिए भी कुछ दण्ड देना पड़ता था।

इस प्रकार देश के आन्तरिक आततायियों से प्रजावर्ग के संरक्षण के लिए प्राचीन भारत के शासकों ने शासन में सुरक्षा-विभाग से पृथक् न्यायविभाग का संगठन किया था। इसमें विधि-नियमों के विशेषज्ञ निष्पक्ष ब्राह्मण भिन्न-भिन्न प्रकार के दण्डों का निर्धारण करते थे। राजा इन दण्डों को प्रयोग में लाता था। वह विजेता को जयपत्र तथा पराजित व्यक्ति को दण्ड देता था, जिससे समाज में मर्यादा बनी रहती थी।

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१ राज्ञामाज्ञा तु शासनम् ॥ कौटि० ३।५२

२ लेख्यं यत्र न विद्येत न भुक्तिर्न च साक्षिणः ।
न च दिव्यावतारोऽस्ति प्रमाणं तत्र पार्थिवः ॥ स्मृति च० २।२६

३ तत्रासीनः स्थितो वापि पाणिमुद्यम्य दक्षिणः ॥ मनु ८।२

४ राज्ञः स्वहस्तसंयुक्तं स्वमुद्राचिह्नितं तथा ।
राजकीयं स्मृतं लेख्यं सर्वेष्वर्थेषु साक्षिमत् ॥

५ प्राड्विवाकादि हस्तांकं मुद्रितं राजमुद्रणा ।
सिद्धेऽर्थे वादिने दद्यांज्जयिने जयपत्रकम् ॥
याज्ञ० २।९१। की टीका में उद्धृत

मध्ययुग का प्रथम भारतीय खगोलशास्त्री-आर्यभट्ट (प्रथम)

पं० केदारदत्त जोशी
ज्योतिष विभाग, सं० म० वि०

याजुष ज्योतिष (वेदाङ्ग ज्योतिष) की रचना सम्भवतः लगधमुनि ने की थी, उनके पश्चात् के ऋषियों ने (कालज्ञानं प्रवक्ष्यामि लगधस्य महात्मनः) महात्मा लगध से जो काल ज्ञान प्राप्त किया था उसके व्याख्यान करने की स्पष्टोक्तियाँ दी हैं।

ईसवी पूर्व १००० (एक सहस्र) वर्ष में याजुष ज्योतिष की रचना हुई थी (सुधाकर द्विवेदी के कथन से यह रचना काश्मीर में हुई थी) इसके पश्चात् की प्रसिद्ध किसी उल्लेखनीय ज्योतिष ग्रन्थ की उपलब्धि नहीं हो रही है।

ईसवी ४, ५वीं शताब्दी में आर्यभट्ट प्रणीत आर्यभट्टीय नामी खगोलीय ग्रह-गणित-ज्योतिष का ग्रन्थ अभी तक सर्व प्रथम उपलब्ध हो सका है।

"आर्य भट्टस्त्विह निगदति कुसुमपुरेऽभ्यर्चितं ज्ञानम्" आर्यभट्टीय ग्रन्थ में स्वयं आर्यभट्ट का उक्त वाक्य है जिससे स्पष्ट प्रतीति हो रही है कि आर्यभट्ट ने पाटलिपुत्र (पटना) में उक्त ग्रन्थ का निर्माण किया था। आर्यभट्टीय के १०८ सिद्धान्त (श्लोक) सब आर्या छन्द में हैं। आर्यभट्ट, आर्यभट्टीय और आर्या छन्द तथा ग्रंथ के चार विभागों में प्रथमादि-विभाग के प्रथमपाद आदि की यह सब विशेषतायें आर्यभट्ट की अर्वाचीन आचार्यों की अपेक्षा असाधारण संज्ञायें हैं।

आर्यभट्ट नामक एक और भी प्रसिद्ध खगोलवेत्ता ९वीं शताब्दी में माने जाते हैं। किन्तु ई० ४, ५ के मध्य के आर्यभट्ट की चर्चा अवान्तरवर्ती आचार्यों के ग्रन्थों में मिलती है द्वितीय की नहीं। प्रथम आर्यभट्ट के ग्रन्थ में अयनांश की चर्चा नहीं है जो ब्रह्मगुप्त, वराहाचार्य, लल्ल के ग्रंथों में भी नहीं मिलती; परन्तु द्वितीय आर्यभट्ट के ग्रन्थ में अयनांश की चर्चा है जो भास्कराचार्य की शिरोमणि में भी मिलती है, अतएव ध्रुव है कि इन्हें प्रथम और दूसरे को द्वितीय आर्यभट्ट कहना ही पड़ेगा।

प्रथम आर्य भट्ट का वैशिष्ट्य क्या है ?

प्रथम आर्यभट्ट के पूर्व के कोई ज्योतिष ग्रंथ उपलब्ध नहीं हो रहे हैं। जैन-संप्रदाय का "सूर्य प्रज्ञप्ति" नाम का एक बृहदाकार ग्रन्थ उपलब्ध तो होता है किन्तु उसमें गणित गोल की एकवाक्यताएं नहीं हैं, और युक्तियाँ भी उपलब्ध नहीं हो रही हैं। संभवतः उस समय में खगोल ज्ञान की उपेक्षा रही थी या जो भी हो; किन्तु अनुमानतः यह कहना पड़ेगा कि प्रथम आर्यभट्ट के पूर्व अवश्य ग्रह-गणित के महत्त्व के कई ग्रन्थ रहे होंगे। बौद्ध-धर्मकालीन साहित्यों के विग्रह की अवस्था से या कारणान्तर से वे लुप्त हुए या हो गये होंगे, किन्तु यह सत्य है कि परंपरा से उनके जानकार भी अवश्य रहे। गुरु परम्परा चल रही थी, जिससे आर्यभट्ट न उक्त ग्रह-गणित-गोलीय आर्यभट्टीय ग्रन्थ का

निर्माण किया और अंकों के पारिभाषिक शब्द—भू, चन्द्र (१) युग्म (२) अनल, गुण (३) वेद, (४) सागर इत्यादि तथा अन्य पारिभाषिक शब्द जो आज तक हमें उपलब्ध हो रहे हैं, वैसे पहले भी रहे होंगे। आर्यभट्ट ने भारत के गणित गौरव की सम्पत्ति का चौर्य न हो इस भय से सर्व साधारणोपयोगी सुलभ रचना न करके परवर्ती अपने देश की संतानों के अवश्य समझने की संभव स्थिति की आशा से अंकों के ज्ञान का विचित्र क्रम निम्न ढंग से रख दिया था।

आर्यभट्ट के अंक प्रकाशन का ढंग :—

एक, दस, सौ, शत सहस्र आदि के ज्ञान के लिए अकारादि, ककारादि, मकारादि वर्गों के अक्षरों का स्थान स्थापित किया है। अवर्ग के सम वर्णों को दस सहस्र लक्षादि स्थान, यकार से हकार तक अन्य वर्णान्तर स्थापित किये हैं। संख्याओं को ककार से आरंभ किया है—

जैसे क=१, ख=२, ग=३, घ=४, ङ=५। च=६··· छ=७··· ट=११··· ठ=१२, त=१६, थ=१७···। प=२१, फ=२२···। भ=२५, ङ म के योग से ५+२५=३०=सम अर्थात् य=३०, र=४०, ल=५०, व=६०, श=७०, स=८०, ष=९०, ह=१००, एवम्

नौ स्वर, वर्ग और अवर्गाक्षर के मिश्रण से १८ स्थान बोधक स्थान कहे हैं। जैसे—क्+अ=क=१, क्+इ=कि=१००, क्+उ=कु=१००० । क्+ऋ, क्+ऌ, क्+ए, क्+ऐ, क्+ओ, क्+औ=१००००००००००००००।

एवम् ख्+अ=ख=२, खि=२००, खु=२००० इसी प्रकार आगे भी समझना चाहिए।

य्+अ=य=३०
य्+इ=यि=३०००
य्+उ=यु=३०००००
एवम् र्+अ=र=४०
र्+इ=रि=४००
र्+उ=रु=४०००

कि और की में भेद नहीं माना है।

अर्वाचीन आचार्यों ने युग रविभ्रमण—कल्पे सूर्यज्ञशुक्राणां खचतुष्करदार्णवाः (सूर्य-सिद्धान्त अर्वाचीन) अर्थात् एक महायुग में सूर्य के भगण (ख चतुष्क) चार शून्य ०००० (रदा) दांत ३२, अर्णवः ४, अंकों की वाम गति से ४३२०००० कहे हैं। किन्तु आर्यभट्ट—युग रवि भगणाः=खु यु घृ संख्यक रवि भगण कहते हैं।

अर्थात् =खु= २००००
यु= ३०००००
घृ=४००००००
=४३२००००

उपलब्ध सौर-सिद्धान्त में इसकी चर्चा है । वराहमिहिर की पंचसिद्धान्तिका में यही चर्चा है जो साम्प्रतिक सौरसिद्धान्त से भिन्न है । और यह कथन आर्यभट्ट के पूर्व के उपलब्ध ग्रन्थों में न होने से मेरी समझ से आगम का स्थान आर्यभट्टीय को ही देना चाहिए क्योंकि उक्त हेतुओं से आर्यभट्ट की प्राचीनता स्वयंसिद्ध है, और प्रायः सभी सिद्धान्त-ग्रंथ सूर्य नाम्ना प्रसिद्धंगत हैं । ज्योतिष के ग्रहगणित के सभी सिद्धान्त सौरसिद्धान्त कहे जा सकते हैं ।

आर्यभट्टकालीन गणित (अंकगणित और रेखागणित)—

(१) कुछ आधुनिक गणितज्ञ ऐतिहासिकों का कथन है कि इजिप्ट (EGYPT) देश में रेखागणित का प्रथम आविष्कार हुआ था । "नील" नदी के तटवर्ती क्षेत्रों का बाढ़ के बाद विभाजन के अवसर पर विभाजन की युक्ति आविष्कारकों के मस्तिष्क में आई जिसने रेखागणित का रूप धारण किया ।

(२) सेसोस्त्रीस (Sesostris) राज ने अपने देश को अनेक खण्डों में विभक्त कर भूमि के अनुपात से टैक्स लेने की व्यवस्था के अवसर पर रेखागणित का आविष्कार किया था, ऐसा हीरोदोतस (Herodotus) नामक ऐतिहासिक का मत है । सिकन्दर के प्रधान सभा-पण्डित अरिस्टोटलाख्य (Aristotle) का भी यही मत है ।

(३) आज से २५०० वर्ष पूर्व मिलिटस (Miletus) के नागरिक थेलस (Thelas) ने रेखागणित-शास्त्र के अनेक सिद्धान्त प्रकाशित किये थे । अर्धवृत्त में उत्पन्न कोण तुल्य होते हैं, यह सिद्धान्त प्रथम इसी ने जाना था । इस उदार विद्वान ने अनेक देशों में अनेक (विद्यामन्दिर) पाठशालायें स्थापित की थीं । ऐसे विश्व के महान् उपकारक की कुँयें में गिरने से मृत्यु हुई । वह रात्रि में तारावेध की स्थिति में जगह-जगह से तारा-वेध से नतांश-उन्नतांश का ज्ञान किया करता था । इनकी मृत्यु के पश्चात् इनके शिष्य अनाक्सिमेण्डर (Anaximander) ने इनका स्थान ग्रहण कर रेखागणित के सिद्धान्तों के परिवर्धन के साथ-साथ भूगोल और खगोल की आकृतियों का ज्ञान करके पलभा-यंत्र की भी रचना की थी ।

थेलेस के द्वितीय शिष्य पैथागोरस (Pythgoras) ने अनेक सिद्धान्तों के साथ त्रिभुज के तीनों कोणों का योग दो समकोण तुल्य सिद्ध किया था ।

पृथ्वी अपने अक्ष पर भ्रमण करती है, नक्षत्र-चक्र अचल है, इस मत की घोषणा से तद्देशीय जनता ने इन्हें पागल घोषित कर दिया था । जिसका दुष्परिणाम यह हुआ कि वे भोजन-आच्छादन की हीनता में मृत्यु को प्राप्त हुए ।

अनन्तर काल में हेपाकेप्स (Hippocyats) ज्योतिषी ने रेखागणित का वर्द्धन किया । आज से २२०० वर्ष पूर्व प्लेटो (Plato) ने गणित की पाठशाला स्थापित की, और पाठशाला के मुख्य द्वार पर "रेखागणितज्ञ ही यहाँ प्रवेश कर सकता है और कोई नहीं" ऐसा लिखकर रेखागणित के परिवर्द्धन का उत्साह दिखाया था ।

इसके पश्चात् भी इस शास्त्र का परिवर्धन प्रचलित था, आज से २१०० वर्ष पूर्व आर्कमेडीज (Archimedes.) ने गोल का घनफल निकाला था, इस गोल घनफल में रेखागणित के जिस चित्र ने उसकी सहायता दी थी उस चित्र पर उसकी इतनी आस्था हो

गई कि "मेरी मृत्यु के पश्चात् मेरी कब्र में वह चित्र अंकित किया जाय" मृत्यु के पहले ऐसा निवेदन कर गया था। ऐसा किया भी गया जो आजतक आर्कमेडीज़ के सजीवत्व का संकेत दे रहा है। इसी के आसन्न काल में युक्लेद (Euclid) ने रेखागणित का अध्ययन कर ग्रीस देश के सिकन्दर-सार्वभौम-पाठशाला में अध्यापक पद स्वीकार कर गणित और रेखागणित में विशेष चमत्कारयुक्त ग्रंथों की रचनाएँ की।

इस ग्रंथ का लगभग १७ वीं शताब्दी में महाराज जयसिंह की आज्ञा से जगन्नाथ पण्डित (ग्रहगणितज्ञ) ने संस्कृत में (रेखागणित का) अनुवाद किया। नृपति जयसिंह के समय से भारतीय ग्रहगणित की एक ऐतिहासिक दिशा प्रचलित हुई। काशी, जयपुर, उज्जैन आदि में ग्रहवेधशालायें एवं यन्त्रादि निर्मित हुए। यहाँ तक ग्रहगणित, रेखागणित आदि यह प्रागाचार्यों की ज्यौतिषशास्त्र को देने हैं, किन्तु जगन्नाथ या जगन्नाथ सम्राट् १६६२ तक के पूर्ववर्ती सभी आचार्यों की देनें पश्चिम से ही हुई हैं। सम्भवत: सुदूर पश्चिम से किसी प्रकार परम्परा से ये चीजें अपने देश में आ सकी होंगी। संभवत: आर्यभट्ट के समय तक पश्चिम का यातायात चलता रहा होगा नहीं तो आर्यभट्ट को यह ज्ञान वेदों से ही प्राप्त हुआ होगा।

किंतु अपने भारतीय आचार्यों में आर्यभट्ट ही एक ऐसे सर्व-प्रथम आचार्य हुए हैं, जिन्होंने घन, वर्ग, वर्गमूल, घनमूल श्रेढ़ी गणित, रेखागणित और बीजगणित आदि के सिद्धान्त अपनी आर्यभट्टीय में लिखे हैं।

अवान्तरवर्ती आचार्यों के गणित में आर्यभट्ट की अपेक्षा अन्य गणितों का भी विवेचन मिलता है, किन्तु त्रिभुज-गणित, त्रिभुजाकार शंकु का घनफल, गोल घनफल, विषम चतुर्भुज क्षेत्रों के कर्णों की कल्पना की युक्ति के साथ-साथ ज्या गणित और वृत्त क्षेत्र के गणित-सूत्र— ये सब मूल सिद्धान्त आचार्य आर्यभट्ट की आर्यभट्टीय में मिलते हैं।

सबसे महत्त्व की बात आर्यभट्ट ने यह भी बताई है कि नाव पर बैठे हुए व्यक्ति जैसे चलित नाव की स्थिरता का अनुभव करते हैं और सामने की भूमि के चलन का भ्रम ज्ञान करते हैं वैसे ही पृथ्वी भी अपने अक्ष पर चलती हुई सूर्य की परिक्रमा करती है; अर्थात् पृथ्वी सूर्य के चारो तरफ अपने अक्ष पर भ्रमण करती है।

इस साधारण गणित के अतिरिक्त आर्यभट्ट का ग्रहगोलीय गणित भी बड़े महत्त्व का है। पृथ्वी की छाया का मार्ग, किसी भी विम्ब में, प्रकाशित अर्धविंब और कृष्ण अर्धविंब से वस्तुज्ञान, सौर-चान्द्र सम्बंध के पंचाङ्ग निर्माण आदि सब आर्यभट्ट ने बताये हैं।

आर्यभट्टीय के टीकाकारों से ग्रन्थ के बहुत स्थल स्पष्ट नहीं हुए हैं। कोई भी टीका विशेष महत्त्व की नहीं है—आर्यभट्ट के उद्भट् शिष्य लल्ललाचार्य हुए हैं (तच्छिष्यो लल्ल:) ऐसा उल्लेख मिलता है। ब्रह्मगुप्त ने आर्यभट्ट की आर्यभट्टीय के खण्डन का कहीं-कहीं पर आग्रह भी किया है। भास्कराचार्य आदि ने आर्यभट्ट के सिद्धान्तों का आदर-पूर्वक नाम लिया है। जो भी हो, आर्यभट्ट संसार भर के गणितज्ञों में, विशेषकर ग्रह गणितज्ञों के इकाई के ऐतिहासिक हैं।

सर्व प्राचीन इस आर्यभट्टीय की आज तक कोई अच्छी टीका उपलब्ध नहीं हुई है। यों तो (१) भास्कर (२) सूर्यदेवयज्वा (३) परमेश्वर और (४) नीलकंठ की चार टीकाएँ कदाचित् ही कहीं उपलब्ध होती हैं।

"तन्त्रस्यार्यभट्टीयस्य व्याख्या क्रियते मया।
परमादीश्वराख्येन नाम्नाऽत्र भटदीपिका" ।।

आर्यभट्टीय तन्त्र की 'भट्टदीपिका' नाम की अल्प व्याख्या परमादीश्वर ने की है। किन्तु तत्पश्चात् आर्यभट्ट के ग्रहगणित के उक्त आर्यभट्टीय ग्रन्थ पर अद्यावधि कोई भी कार्य नहीं हुआ है। ऐसे महत्त्व के ग्रन्थ की उपलब्धि भी सरल नहीं है।

आर्यभट्ट का पंचाङ्ग दक्षिण भारत में वैष्णवों में प्रसिद्ध है।

अतएव शोधसमितियों से अनुरोध है कि अविलम्ब वे ज्योतिषशास्त्र के ग्रह-गणितज्ञ विद्वानों की व्याख्या के साथ आर्यभट्टीय तंत्र के प्रकाशन की व्यवस्था करें, तथा हिन्दी भाषा-भाषी देश के लिए गणित उदाहरणों के साथ-साथ इस पुस्तक का अच्छा हिन्दी अनुवाद भी सुलभ करें।

भारतीय दर्शन में समन्वय-भावना

डॉ देवराज

भारती महाविद्यालय

भारतीय संस्कृति की एक विशेषता उसकी समन्वय की प्रवृत्ति है। इस प्रवृत्ति का ठीक तात्पर्य क्या है ? वास्तविक समन्वय एक जीवन्त प्रक्रिया है जिसकी, विशिष्ट क्षेत्रों में, विशष उपयोगिता होती है। मानवीय मन व बुद्धि विरोध की स्थिति में नहीं रहना चाहते; वे विरोधी अनुभवों तथा विचारों के बीच सामंजस्य खोजते हैं। सामंजस्य की यह अभिलाषा ही समन्वय की प्रवृत्ति को उत्पन्न करती है। हमारी छड़ी पानी के बाहर सीधी और उसके भीतर मुड़ी हुई दिखाई देती है; इस विरोध को मिटाने के लिए विज्ञान अर्थात् आलोक-विज्ञान एक नये व्याख्या-सूत्र की उद्भावना करता है। व्यवहार के क्षेत्र में समान नीतियों एवं आदर्शों को अपनाने की जरूरत समन्वय की प्रवृत्ति को जन्म देती है।

भारतीय दार्शनिकों ने, दर्शन और आध्यात्मिक साधना के क्षेत्रों में, एक बहुत ही महत्त्वपूर्ण समन्वय किया। इस समन्वय का सम्बन्ध जीवन के चरम लक्ष्य और उसकी ओर ले जाने वाली साधना से था। ऊपर से देखने पर लगता है कि भारत के विभिन्न दर्शनों की मानव-जीवन के चरम लक्ष्य अर्थात् मोक्ष की धारणा अलग-अलग है; बुद्ध का निर्वाण, न्याय का अपवर्ग, सांख्य-योग का कैवल्य और वेदान्त का ब्रह्मभाव एक ही नहीं है। किन्तु इन भिन्नताओं के पीछे एक तात्त्विक एकता है; मोक्ष का अर्थ है जन्म-मरण के चक्र से छुटकारा पाना। इस दृष्टि से यहाँ के अधिकांश दर्शन एकमत हैं।

इसी प्रकार साधना के क्षेत्र में अनेक मार्गों के प्रतिपादन के बावजूद एक मौलिक एकता है। इस एकता का मूलाधार यह भावना है कि मोक्षमार्गी जिज्ञासु तथा साधक को संसार के भोगैश्वर्यों के प्रति विरक्त होना चाहिए।

आश्रम-व्यवस्था के रूप में भारतीय चिन्तकों ने एक दूसरी कोटि के समन्वय का भी आरम्भ किया था, अर्थात् ऐहिक तथा पारलौकिक जीवन-लक्ष्यों और उनकी ओर ले जाने वाले प्रयत्नों का समन्वय। मनु और मीमांसा-दर्शन ने यह स्पष्ट स्वीकार किया कि मोक्ष की अभिलाषा करने से पहले मनुष्य को उन ऋणों का परिशोधन कर लेना चाहिए जो, एक लौकिक-सामाजिक प्राणी होने के नाते, उसके प्रतिदेय हैं। इस दृष्टि से हमें परम्परा से प्राप्त ज्ञान का संरक्षण और उन्नयन करना चाहिए, और वंश-परम्परा को आगे बढ़ाना चाहिए। इन ऋणों के अतिरिक्त तीसरा ऋण देव-ऋण है, जो यज्ञानुष्ठानों द्वारा चुकाया जाता है।

पता नहीं किसी युग में हमारे देश में ऐसी आदर्श आश्रम-व्यवस्था रही या नहीं, पर यह देखने की बात है कि आगे चलकर यह आदर्श विघटित हो गया। हमारे ऐतिहासिक युगों में वर्णाश्रम-व्यवस्था का व्यवस्थित रूप प्रतिष्ठित दिखाई नहीं देता। विशेषतः वर्ण-व्यवस्था तो बहुत काल से विच्छिन्न हालत में दिखाई देती है। 'महाभारत' में युधिष्ठिर ने और 'ब्रह्मसूत्रभाष्य' में शंकराचार्य ने यह संकेत किया है कि उनके समय में वर्णव्यवस्था व्यवस्थित रूप में मौजूद नहीं थी। आश्रम-व्यवस्था का भी कुछ ऐसा ही

इतिहास रहा है। बाद के वेदान्तियों ने स्पष्ट रूप में आश्रम-व्यवस्था के महत्त्व को अस्वीकार किया। उन्होंने कहा--यदहरेवविरजेत् तदहरेव प्रव्रजेत् अर्थात् जिस दिन वैराग्य हो जाय उसी दिन संन्यास ले ले। वेदान्तदर्शन ज्ञान-मार्ग का समर्थक है, वह कर्म तथा नैतिकता के जीवन को विशेष महत्त्व नहीं देता। इसी प्रकार जैनधर्म तथा बौद्ध-धर्म में भी संन्यस्त जीवन का विशेष महत्त्व है।

गृहस्थ जीवन अथवा लौकिक जीवन के प्रति दार्शनिकों की उपेक्षा-दृष्टि का एक बुरा फल यह हुआ कि यहाँ के चिन्तक नैतिक, सामाजिक तथा राजनैतिक समस्याओं के प्रति बहुत कुछ उदासीन बन गये। यूरोप में नीति-दर्शन, समाज-दर्शन तथा राजनीति-दर्शन का भी महत्त्वपूर्ण इतिहास है। वहाँ के प्रायः सभी बड़े दार्शनिकों ने इन क्षेत्रों से सम्बन्धित समस्याओं पर गम्भीरता से चिन्तन किया है। प्लेटो की 'रिपब्लिक' (जनतंत्र) पुस्तक में सुकरात एक वितण्डावादी (सोफिस्ट) के विरुद्ध कहता है—जब तक मेरे शरीर में आखिरी साँस है तब तक मैं यह सिद्ध करने की कोशिश करूँगा कि अन्याय अथवा अनैतिकता के जीवन की अपेक्षा न्याय अथवा नैतिकता का जीवन ज्यादा लाभप्रद एवं सुखकर होता है। भारतवर्ष के किसी बड़े दार्शनिक ने सामाजिक न्याय तथा अन्याय के सम्बन्ध में इतनी गम्भीरता से चिन्तन नहीं किया। वस्तुतः उन्होंने मनुष्य के लौकिक जीवन को उतना महत्त्व ही नहीं दिया। 'महाभारत' में अर्जुन तथा युधिष्ठिर दोनों को प्रवृत्तिमूलक जीवन का महत्त्व समझाने की कोशिश की गई—अर्जुन को 'गीता' में और युधिष्ठिर को 'शान्तिपर्व' में। किन्तु बाद के चिन्तकों ने इन समस्यायों को महत्त्व देना कम कर दिया। हमारे उत्तरकालीन दार्शनिक मुख्यतः मोक्ष और उसकी साधना में रुचि रखते हैं। इस दृष्टि से मध्ययुग में हालत और भी खराब हो गई। कालिदास ने जहाँ एक ओर रघु को विश्वविजेता दर्शित किया है, वहाँ दूसरी ओर उसकी मोक्ष-साधना का भी वर्णन किया है। किन्तु शंकर आदि आचार्यों की दृष्टि में सफल लौकिक जीवन का कोई महत्त्व नहीं है। हमारे यहाँ नैतिक शिक्षण का काम स्मृतिकारों ने अपने हाथों में ले लिया। यहाँ के स्मृति-ग्रन्थ विधि-निषेधों से भरे पड़े हैं; उनमें वह चीज नहीं है जिसे नीतिशास्त्र अथवा नैतिक चिन्तन कहते हैं। आज के शंकाशील युग में स्मृतिग्रन्थों की उपयोगिता बहुत कम हो गई है। आज के नवयुवक नैतिक प्रभेदों तथा आदर्शों का बुद्धि-सम्मत आधार खोजते व माँगते हैं; वे निराधार विधि-निषेधों को स्वीकार करके नहीं चल सकते।

आज के पृच्छाशील नरनारी ईश्वर, पुनर्जन्म, परलोक, मोक्ष आदि की अपरीक्षित अथवा अर्द्धपरीक्षित मान्यताओं को ज्यों का त्यों स्वीकार करने को तैयार नहीं हैं। यह कहना कि हमें इन मान्यताओं को इसलिए स्वीकार कर लेना चाहिए कि वे हमारे पूर्वजों की देन है, बालकों जैसी बात है। आज हम अपने पूर्वजों के रसायनशास्त्र और गणित-शास्त्र को लेकर सन्तुष्ट नहीं हो सकते, और न उनकी भाँति बैलगाड़ी में यात्रा करने को ही तैयार हो सकते हैं। परिवर्तन और प्रगति मनुष्य के ऐतिहासिक जीवन का अंग है; दार्शनिक दृष्टियों का परिवर्तन भी इतिहास का नियम है। आज जरूरत इस बात की है कि हम जीवन-मूल्यों के सम्बन्ध में फिर से नवीन चिन्तन करें, और लौकिक तथा आध्यात्मिक लक्ष्यों के सम्बन्ध में एक नये समन्वय को प्राप्त करने का प्रयत्न करें।

आज के युग में, जब यातायात के साधनों की वृद्धि के कारण, विश्व की समस्त जातियाँ और उनकी सांस्कृतिक विचार-धारायें एक-दूसरे की समक्षता में आ गई हैं, जीवन-मूल्यों-सम्बन्धी हमारे समन्वय का आधार सिर्फ हमारे देश की चिन्तन-सरणियाँ ही नहीं हो सकतीं। आज का महत्त्वपूर्ण चिन्तक समस्त विश्व की विचार-राशि को सामने रखकर ही नये समन्वय का प्रयास कर सकता है।

इसके अलावा एक दूसरी बात भी विचारणीय है। एक जीवन्त जाति केवल पुरानी विचार-धाराओं का समन्वय ही नहीं करती, वह नये मूल्यों का अन्वेषण और नया चिन्तन भी करती है। यूरोप के विचारक विभिन्न विज्ञानों तथा दर्शन के क्षेत्र में भी इधर नितान्त नवीन चिन्तन करते रहे हैं। यह समझना भूल है कि इस प्रकार का अन्वेषण तथा चिन्तन प्राचीन मनीषियों के प्रति अश्रद्धा का द्योतक है। नया चिन्तन करने का अर्थ प्राचीन विचारों के महत्त्व से इन्कार नहीं है; वह सिर्फ यह स्वीकार करना है कि प्राचीन, कुछ दृष्टिओं से, पूर्ण नहीं है। और यदि आज के चिन्तक कुछ बातों में प्राचीनों का खण्डन करें, तो वह भी अश्रद्धा का द्योतक नहीं होगा। खण्डन हम उन्हीं मन्तव्यों का करते हैं जो महत्त्वपूर्ण समझे गये हैं और समझे जाते हैं। अपने 'ब्रह्मसूत्रभाष्य' में श्री शंकराचार्य ने सभी समकालीन दर्शनों का खण्डन किया है; आज यदि हमें शंकर के दर्शन का खण्डन करना पड़े, तो यह कोई अनहोनी बात नहीं होगी। इस देश के उत्तरकालीन दर्जनों दार्शनिकों ने शंकर का खण्डन किया है। यही बात यहाँ के तथा बाहर के भी अनेक दर्शनों पर लागू होगी।

ऊपर हमने कहा कि भारतीय विचारकों ने मोक्ष या निर्वाण नामक ध्येय के सम्बन्ध में बड़ा व्यवस्थित एवं पूर्ण चिन्तन किया है। किन्तु विदेशों के विभिन्न चिन्तकों ने आदर्श जीवन तथा जीवन-ध्येय के दूसरे चित्र या धारणायें प्रस्तुत की हैं। कोई कारण नहीं कि हम उन धारणाओं पर निष्पक्ष होकर विचार न करें। वस्तुतः हमारे इस कथन का कि भारतीय विचारकों ने, अथवा किसी विदेशी विचारक ने, जीवन के चरम लक्ष्य के विषय में महत्त्वपूर्ण चिन्तन किया, सिर्फ यही अर्थ है कि वह चिन्तन क्लासिकल महत्त्व रखता है और आज भी विचारणीय है। इस स्वीकृति का यह अर्थ नहीं कि आज उस प्रश्न पर नया चिन्तन करने के लिए गुंजाइश नहीं है। कोई जरूरी नहीं कि सब प्रकार के मनुष्यों के लिए एक ही आदर्श जीवन और एक ही जीवन-लक्ष्य हो। संक्षेप में, हमारा निष्कर्ष यह है : जिस प्रकार बाल्मीकि और कालिदास को महाकवि मान लेने का यह अर्थ नहीं है कि आज नई काव्य-रचना न की जाय, वैसे ही प्राचीन दार्शनिकों के महत्त्व की स्वीकृति यह प्रमाणित नहीं करती कि आज उच्च कोटि का दार्शनिक चिन्तन अनपेक्षित है। जिस प्रकार आज के कवि के लिए सौन्दर्यबोध के नये क्षेत्र उपलब्ध हैं, वैसे ही एक चिन्तक के लिए लगातार नये दार्शनिक प्रश्न दिखाई देते रहते हैं। हम मानते हैं कि काव्य और काव्यशास्त्र, नीति और दर्शन तथा विभिन्न विज्ञानों के क्षेत्र में आज हमें उतना ही क्रियाशील रहने की जरूरत है जितना कि प्राचीन भारत तथा आधुनिक यूरोप के लेखक और विचारक होते आये हैं। मानव अनुभूति तथा चिन्तन के किसी भी क्षेत्र में यदि किसी व्यक्ति को नये प्रश्न व समस्यायें दिखाई नहीं पड़तीं, तो उसे गम्भीरता से यह प्रश्न अपने सामने रखना चाहिए—कहीं मेरी मानसिक गठन तथा बौद्धिक विकास में कोई गहरी कमी तो नहीं रह गई है ?

मातृभूमिभक्तिः

रुद्रधर झा

संस्कृतमहाविद्यालय

विदितमेवैतत्समेषां समीक्षणक्षमाणां यत् 'प्रायः प्राणभृतां प्रेमाणमन्तरेण नान्यद्बन्धनमस्ति'। परन्तु स एव प्रेमा-ईश्वरस्य, मातुर्वा पितुर्वा गुरोर्वाऽतिथेर्वा मातृभूमेर्वा भक्तिरूपतामाप्नुवन् भवसागरपाराय महाजलयानतामावहति।

अत्र केचनेत्थं विवेचयन्ति-एक एव प्रेमा भगवदादौ श्रद्धाविश्वाससहितो भक्तिशब्देन, मित्रादौ विश्वाससाम्यभावनासहकृतः प्रेमशब्देन, सुतादौ च विश्वासवात्सल्यभावनासमवहितः स्नेहशब्देन व्यवहर्तव्यतामाप्नोतीति। तत्र 'मातृभूमिभक्तिः' संक्षिप्य विवेचनीयो विषयः।

अत्र-मातुर्भूमिर्मातृभूमिरथवा माता चासौ भूमिर्मातृभूमिस्तस्या भक्तिर्मातृभूमिभक्तिरिति व्युत्पत्तिं विदन्ति विद्वांसः। उभयथाऽप्युपपद्यत एवैतद्यतः—'जननी जन्मभूमिश्च स्वर्गादपि गरीयसी'। तथा च मातृभूमिभक्तिर्नाम-स्वदेशे निष्कारणा भक्तिः; सा द्विविधा, परापरभेदात्; तत्रापरा साधारणी, परा चासाधारणी। अनुक्षणं प्राणिमात्रेणेष्यमाणस्य दुःखाभावसहितस्य सुखस्य जननीयन्तस्य जनकमपि किमपि पुण्यमुत्पादयन्ती सत्तमा भक्तीनाम्। एतयैव प्रेरिताः प्राणिनो न केवलं स्वार्थाविरोधेनापि तु स्वार्थपरित्यागेनापि स्वदेशहितार्थं प्राणमप्युत्सृजन्ति। उक्तलक्षणा भक्तिस्तत्तद्देशजप्राणिषु स्वं स्वं देशम्प्रति नैसर्गिकी भवति। अत एव सर्वे जनाः–धनिनो दीना वा शिक्षिता वाऽशिक्षिता वा गृहिणो वा गृहत्यागिनो वा वृद्धा वा बाला वा पुरुषा वा स्त्रियो वा स्वं देशम्प्रशस्यमानमाकर्ण्य प्रसीदन्ति, निन्द्यमानञ्चानुनिशम्य सीदन्ति।

धन्येयं देशभक्तिः, तस्यामेव हि वर्धमानायां विवेकिनां हृदयं सर्वथा परान् सेवितुमाकुलीभवति। किं बहुना-मर्यादापुरुषोत्तमस्य श्रीमतो रामचन्द्रस्य—

'स्नेहं दयाञ्च सौख्यञ्च यदि वा जानकीमपि।
आराधनाय लोकस्य मुञ्चतो नास्ति मे व्यथा॥'

इत्यादिवचनेनाभिव्यक्तयाऽसाधारण्याऽपि भावनया समाविष्टा भवन्ति देशभक्ताः। ततश्च **'सेवाधर्मः परमगहनो योगिनामप्यगम्यः'** इत्यादिसूक्तिभिः सूचितां दुष्पाल्यतामाश्रयन्तमपि सेवाधर्मं पालयितुं प्रतिजानानाः 'आर्त्तो जिज्ञासुरर्थार्थी' इति भगवदुक्त्या 'ज्ञानाय दानाय च रक्षणाय' इति सूक्त्या च प्राणिप्रवरेणेष्यमाणतया सूचितं ज्ञानं धनं रक्षणञ्च सम्पादयितुं स्वेषु ज्ञानधनयोर्दानस्य रक्षणकरणस्य च शक्तीरन्विष्यन्ति। किन्तु तेषां केचिदेवोत्कृष्टपुण्यवन्तः सकलानान्तेषां, केचन पुण्यशालिनो द्वयोरेव, केचिच्च पुण्यात्मान एकस्यैव शक्तिमासाद्य साक्षात्परम्परया वा जनतामुपकर्तुं प्रयतन्ते। परन्त्वत्रेदं सर्वैः सदसद्विवेचनचतुरैरवधेयं यत्—प्रभूतसदंशसम्पन्नमपि वस्तु विपुलासदंशव्याप्तवस्तुसम्पर्कान्मलि-

नायतेऽग्राह्यतां निन्द्यताञ्चासादयतीति सर्वत्र सर्वथा सदसद्विवेचनमपेक्ष्यैव किञ्चिदपि विधेयतामर्हति, अन्यथा साधनान्यप्यपेक्षितप्रकारानानासादयन्त्यसाधनायन्तेऽथ च साध्यं कथमपि सम्पत्तुं नार्हति ।

यदेयं देशभक्तिर्दृढतामासादयति तदाऽऽदधाति किमप्याश्चर्यकरं सामर्थ्यम्, अत एव धनापहारे महिलाऽवमर्शे वा जीवनसङ्कटे वा कातरोऽपि साहसी सम्पद्यते, दुर्बलश्चापि बलवान् । किं बहुना—

'सर्वे कुशलिनः सन्तु, सर्वे सन्तु निरामयाः ।
सर्वे भद्राणि पश्यन्तु मा कश्चिद् दुःखभाग्भवेत् ।।'

इत्याद्यनवरतमुद्घोषयन्तोऽपि सर्वथा शान्तजीवना अपि विलक्षणवैचक्षण्यवन्तोऽपि मनस्विनः स्वदेशे पराधीनतामुन्मूल्य स्वतन्त्रतां सम्पादयितुं रक्षितुं वा पराक्रमणं प्रतिषेद्धुं परित्यज्याध्ययनाध्यापनादीनि सैन्यवृत्तिमातिष्ठन्ति । स्वतन्त्रस्यैव हि देशस्य जनता निजया संस्कृत्या प्रतिक्षणमुन्नमन्त्या सर्वविधं कल्याणमावहति, पुरुषार्थचतुष्टयं हि साधयितुमवसरमवाप्नोति । अत एवोक्तं केनचिन्मनीषिणा—

'मनस्वी म्रियते कामं, कार्पण्यं न तु गच्छति ।
अपि निर्वाणमायाति नानलो याति शीतताम् ।।' इति

विदेशे निर्दुःखं सर्वविधं सुखमुपभुञ्जाना अपि न शक्नुवन्ति स्वं देशं विस्मर्तुमपि तु प्रतिक्षणमुत्कण्ठन्त एव तमवाप्तुं तत्रत्याञ्च व्यक्तिं विलोकितुं भाषां वा श्रोतुम् । अमुमेवाशयं द्रढयतः केषाञ्चित्कवीनाम्पद्ये निम्नलिखिते—

वासः काञ्चनपञ्जरे नृपकराम्भोजैस्तनूमार्जनम्,
भक्ष्यं स्वादु रसालदाडिमफलं पेयं सुधाभम्पयः ।
पाठः संसदि रामनाम सततं धीरस्य कीरस्य मे,
हा हा हन्त तथापि जन्मविटपिक्रोडं मनो धावति ।।
अस्ति यद्यपि सर्वत्र नीरं नीरजराजितम् ।
रमते न मरालस्य मानसं मानसं विना ।।२।।

स्वदेशीयेन भूम्यन्नकन्दमूलफलादिना जलेन वा वृक्षलतादिना वा, किं बहुना-सर्वविधेन स्थावरजङ्गमात्मकेन जीवेन भूतेन वाऽनिर्वचनीयः स्नेहो भवति प्राणिनामज्ञानां विज्ञानां वा योगिनामयोगिनां वा । अत एवोक्तं शाकुन्तले नाटके कण्वमभिनयता कविकुलगुरुणा कालिदासेन—

पातुं न प्रथमं व्यवस्यति जलं युष्मास्वसिक्तेषु या
नादत्ते प्रियमण्डनापि भवतां स्नेहेन या पल्लवम् ।
आद्ये वः कुसुमप्रवृत्तिसमये यस्या भवत्युत्सवः
सेयं याति शकुन्तला पतिगृहं सर्वैरनुज्ञायताम् ।।

वस्तुतस्तु—त एव प्राणिनो देशभक्तेषु गण्यन्ते, ये स्वातन्त्र्यमेव पुरुषार्थमवधारयन्ति । यद्यपि—आनन्द एव जीवानां काम्यं वस्तु निरन्तरम्, अत एव प्राणिमात्रं प्रतिक्षणं प्रतिपदार्थं प्रतिस्पन्दनं वा तमेवान्विष्यति, तथापि—आनन्दमिव स्वातन्त्र्यं सत्त्वं ज्ञानं शासकत्वञ्चापि निरन्तरमेव कामयन्ते जीवाः । स्थितावस्थां समेषां सामञ्जस्याय आनन्दात्मकतैव तेषां

सकलानामवबोध्या, निरन्तरं हि सत्त्वमेकस्यैव सम्भवति। इदमेव तथ्यमुद्घोषयति तत्त्वावेदकोऽपौरुषेयः प्राणिमात्रकल्याणव्यवस्थापकः प्रमाणसम्राट् श्रुतिशब्दः 'सत्यं ज्ञानमनन्तं ब्रह्म, विज्ञानमानन्दं ब्रह्म, भीषाऽस्माद्वातः पवते, न तस्य कश्चित्पतिरस्ति लोके' इत्यादिरूपकः। परन्त्वेकमेव वस्तु विभिन्नरूपेण कामयन्ते विचित्ररुचयो जीवाः, तत्र ये स्वातन्त्र्यरूपेण तत्समीहन्ते तेष्वेव भवति शब्देन व्यवहारेण च देशभक्तिरभिव्यक्ता।

यथेयं सुदृढा,महीयसी देशभक्तिः प्रेरयति जनतां स्वार्थं विहायोत्थानाय देशरक्षणाय च विक्रान्तमाचरितुं तथा नान्यत्किञ्चनेति नाविदितं केषाञ्चन परीक्षकाणाम्। एतया प्रेरिता एव कोटिशो लोका उपेक्ष्येष्टजनवियोगमनादृत्य चिरानुभूतं सुखसाधनं तिरस्कृत्य भर्तव्यभरणं तृणीकृत्य च जीवनं सोत्साहं सैन्यवृत्तिमास्थाय—

अच्छेद्योऽयमदाह्योऽयमक्लेद्योऽशोष्य एव च।
नित्यः सर्वगतः स्थाणुरचलोऽयं सनातनः ॥१॥
द्वावेव पुरुषौ लोके सूर्यमण्डलभेदिनौ।
परिव्राड् योगयुक्तश्च रणे चाभिमुखो हतः ॥२॥
वासांसि जीर्णानि यथा विहाय, नवानि गृह्णाति नरोऽपराणि।
तथा शरीराणि विहाय जीर्णान्यन्यानि संयाति नवानि देही ॥३॥

इत्यादिभगवदादिवचनजातैरुद्बोध्यमाना युद्धे तथा संग्रामयन्ते यथा झटित्येव शत्रून् पराजयन्ते स्वदेशञ्च सत्यसीमासीमितं रक्षन्ति। ये च स्थूलकायाः श्रेष्ठिवृन्दाः, शिशुवृद्धार्तपरिचरणरता महिलादयो वा वृद्धा वा बाला वा रोगादिपीडिता वा मानवाः कथञ्चिदपि योद्धुं न क्षमन्ते, तेऽप्यहर्निशमाक्रामकविनाशं वाञ्छन्ति, तदर्थं स्वत एव रूप्यकरूपकमन्नात्मकं वा भूषणादिरूपकं वा प्रभूतमूल्यकं किमपि वस्तु वा, किं बहुना-सर्वस्वमपि समर्पयन्ति, स्वेष्टदेवताञ्च निरन्तरमनुकूलयन्ति।

श्रूयन्ते च बहूनि खलूपाख्यानानि मातृभूमिभक्तिमतां लोकोत्तरचरितानां स्वदेशस्वातन्त्र्यसंरक्षणाय प्राणानपि परित्यक्तवतां परित्यक्तुमुद्यतानां वा महावीराणां राम-कृष्ण-शिव-प्रताप-सुभाष-पद्मिन्यादीनाम्। यानि श्रूयमाणान्येव कमाश्चर्यचकितं तत्प्रशंसनपरं वा न विदधति, कं वा युद्धोन्मुखं समुत्साहोच्छलच्चित्तं वा न रचयन्ति।

अलमनल्पजल्पनेन, 'कामये दुःखतप्तानां प्राणिनामार्तिनाशनम्' इत्यादिभारतीयभारत्याऽभिव्यक्ताभिः सर्वोच्चभावनाभिरेवानवरतं भावितानां स्वदेशं सततं स्वेनाचारेणोन्नमयतां विचारेण च विदेशेषु प्रख्यापयतां देशभक्ताग्रणीनां राजनीतिनिपुणानामादेशेन 'संघे शक्तिः कलौ युगे' इति स्मरता संघटितीभूयैव तथा वक्तव्यं व्यवहर्तव्यञ्च यथा कथमपि स्वदेशस्वातन्त्र्यभास्करो नास्तं व्रजेत्, अथ च सर्वथोन्नमति देशे निवसन्ती जनताऽनायासेनैव पुरुषार्थचतुष्टयमवाप्नुवती विश्वगुरुतां भजेत। निरन्तरं स्मरणीयाश्च निम्नलिखिताः सूक्तयः—

पादाहतं यदुत्थाय मूर्धानमधिरोहति।
स्वस्थादेवापमानेऽपि देहिनस्तद्वरं रजः ॥१॥
एतावानेव पुरुषो यदमर्षी यदक्षमी।
क्षमावान्निरमर्षश्च नैव स्त्री न पुनः पुमान् ॥२॥

अङ्गनवेदीकुल्या जलधिः स्थली च पातालम् ।
वल्मीकश्च सुमेरुः कृतप्रतिज्ञस्य वीरस्य ॥३॥
काष्ठादग्निर्जायते मथ्यमानाद्भूमिस्तोयं खन्यमाना ददाति ।
सोत्साहानां नास्त्यसाध्यं नराणाम् मार्गारब्धाः सर्वयत्नाः फलन्ति ॥४॥
हस्ती स्थूलतनुः स चाङ्कुशवशः किं हस्तिमात्रोऽङ्कुशो-
वज्रेणाभिहताः पतन्ति गिरयः किं शैलमात्रः पविः ।
दीपे प्रज्वलिते विनश्यति तमः किं दीपमात्रं तम-
स्तेजो यस्य विराजते स बलवान् स्थूलेषु कः प्रत्ययः ॥५॥
वह्नि शीतयितुं हिमं ज्वलयितुं वातं निरोद्धुम्पयो-
मूर्तं व्योम विधातुमुन्नमयितुं नेतुं नतिं वा महीम् ।
उद्धर्तुं किल भूभृतः स्थलयितुं सिन्धुञ्च सम्भाव्यते
शक्तिर्यस्य जनैः स एव नृपतिः शेषाः परं पार्थिवाः ॥६॥

CHARLES DICKENS : A STUDY IN VALID NORMS

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The novel had been regarded in the eighteenth century as a mirror of life, which catered to the instinct of people to know about men and women who had a lot similar to their own. It aimed only to please those for whom it was written. From 1884, to take a fairly accurate starting point, there has been a new assessment of the novel. Henry James wrote that the English novel, "had no air of having a theory, a conviction, a consciousness of itself behind it—of being the expression of an artistic faith, the result of choice and comparison."[1] According to him the form of the novel as Dickens and Thackerey saw it was naif. There came an awareness that the novel is not a collectanea, but an artistic whole with a functional organism of its own. The essential principles of poetry were applied in extenso or in a particular form to the novel, as F. R. Leavis did when he wrote of *Women in Love*[2] or *The Rainbow*[3] or *St. Mawr*[4] in several numbers of the *Scrutiny*. Walter Allen wrote with the same point of view : "Henry James and Flaubert both strove to give the novel the aesthetic intensity of a great poem or a great painting."[5] Henry James the artist-conscious novelist emphasised discussion, suggestion, and formulation in the writing of novels. Symbolism became a major method for getting at the essence of a creative work or striking upon the vision of the artist. Herman Melville, for example, in *Moby Dick* symbolises the evil-good conflict in subject and object. Another trend in

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[1] Henry James : *The Art of Fiction* in *Literary Criticism in America*, ed. by D. Van Nostrand, p. 139, The Liberal Arts Press, New York, 1957.

[2] *Scrutiny*, Autumn 1950, March 1951, June 1951.

[3] Ibid. Winter 1951, June 1952, October, 1952.

[4] Ibid. Spring 1950.

[5] Walter Allen : *The English Novel*, p. 252, Phoenix House Ltd., London, 1955.

artistic creation was the stream of consciousness technique found in the novels of James Joyce and Virginia Woolf. Walter Besant emphasised clasiscal qualities in *The Art of Fiction*. He wrote, "the laws of fiction may be laid down and taught with as much precision and exactness as the laws of harmony, perspective and proportion."[1] The novel by these varied frames of reference provoked critical academicians to formulate the art of the novel within the novel itself apart from the writer or the reader. To read a novel in this way was to summon a highly critical intelligence of a reader-critic.

The modern values of the novel with its essays into the artistic faith of the novelist or his experiments with poetry for the novel and its sense of exactness as an art-form do not readily explicate with fairness or do justice to the novels of Victorian era. Q.D. Leavis in her book *Fiction and the Reading Public* applies the standard of the "Reading Public" to assess the success and greatness of a novelist. I. A. Richards observes, "no theory of criticism is satisfactory which is not able to explain the wide appeal of the best-sellers and to give its reason why those who disdain them are not necessarily snobs."[2] Q. D. Leavis's approach in considering the reading public is anthropological,[3] as she considers the race basically or relates it to the acquirements and tastes of people at a particular time in a particular country. But there is a universal Reading Public with universal tastes, likes and dislikes, and the novelist who is read by this public, not bound by space or time, is a great one in spite of a perchance failing as an artist.

Charles Dickens is a novelist who will slip down to a much lower place if we were to judge him by the standards of the twentieth century theorists of the novel. He has to be assessed in a particular way, namely with reference to the reading pu-

[1] Walter Besant : *The Art of Fiction*, Excerpt from Henry James's, *The Art of Fiction*, p. 146.

[2] I. A. Richards : *Principles of Literary Criticism*, p. 203, Routledge & Kegan Paul Ltd., London, 1959.

[3] Q. D. Leavis : *Fiction and the Reading Public*, pp. 15, 270, Chatto & Windus, London, 1932.

blic which was a vital factor in his own day and also in relation to the life-values that his novels possess.

The charges against Dickens, the fiction-artist, are many. The basic charge against him is that his genius rests on exaggeration. Take out the hyperboles and Dickens falls flat as a novelist. He overdraws character, circumstance, and incident. The intense sensibility in him gets the upper hand over his reason. He cannot see things in their right proportion. Lord David Cecil has observed, "Dickens's imagination is a distorting class turning to grotesque comedy or grotesque terror the world that it reflects."[1]

When Dickens is conceiving character, his special knack for exaggeration leads him to caricature. Apart from obvious physical distortions some of his characters have mental proclivities. Mr. Micawber is expecting for "something to turn up" all the time. Mrs. Micawber too has her linear distortion as she enters every time saying, "I will never desert Mr. Micawber."

Closely allied with the tendency to caricature characters is Dickens's fondness for the theatrical and the melodramatic. Some of his characters have an exaggerated air, and it would be difficult for them to find their counterpart in real life. The thief who is being chased can stop to mutter, "Wolves ! tear your throats only in Dickens's world of *Oliver Twist*.[2] The run-away convict with pursuers at his heels can terrify a little boy by saying, "Mind you ! Bring the food and file tomorrow, otherwise I will tear you to pieces,"[3] only in *Great Expectations*. A woman who has been duped by her suitor exactly in her wedding-hour, can sit in the candle-lit room, all the time with her wedding-dress on, hammering the idea of revenge in a young girl only in the world of Dickens's creation.[4] Life can hardly offer parallels to such beings.

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[1] David Cecil : *Early Victorian Novelists*, p. 61, Penguin Books, 1948.
[2] Charles Dickens : *Oliver Twist*, p. 224, Pocket Library edition, 1957.
[3] Charles Dickens : *Great Expectations*, p. 7, Penguin Books, 1955.
[4] Ibid. pp. 54-55.

It is held that most of Dickens's characters are static and undramatic.[1] They do not evolve and change. They do not act, form purposes and carry them out. They seem to behave only when placed in a certain set of circumstances. They figure like snap-shots, caught and fixed in an eternal static pose. In the terminology of a critic like E. M. Forster they belong to the category of flat characters, and not to the round.[2] We can see them always in one way, not all the way round. Sometimes they are conjured into being to serve the exigencies of the plot, which has scarce any relation with character.

Dickens had no idea of the craftmanship of fiction. He began with a book of essays, and his novels are only essays stitched together into a series. There is no such thing as organic wholeness in his plots. Lord David Cecil observes, "Very often he leaves a great many threads loose till the last chapter; and then finds there is not enough time to tie them up neatly. The main strands are knotted roughly together, the minor wisps are left hanging forlornly."[3] He had no idea of the dramatic unity as applied to fiction. It is true that fiction is under no obligation to observe the unities of drama in the construction of its plot, but nevertheless their observance adds to the achievement of a novelist. Dickens shows no concern for the arena in which his dramatis personae are to play their part. The limited range in which a dramatic novel[4] allows its characters to act and react, shutting all the exits and entrances, and making us feel the impact of time on them, adds to the concentration of effect. When Dickens found that the sales of *Martin Chuzzlewit* was falling, he packed off Martin to America, giving least consideration to the irrelevancy of the proceeding to the main action of the novel.

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[1] Taine : *History of English Literature*, Vol. IV., pp. 155, 157, Edinburgh, Edmonston and Douglas, 1874.

[2] E. M. Forster : *Aspects of the Novel*, p. 65, Edward Arnold & Co, London, 1949.

[3] David Cecil : *Early Victorian Novelists*, p. 28, Penguin Books, 1948.

[4] Edwin Muir : *The Structure of the Novel*, p. 41, The Hogarth Press, London, 1960.

Dickens's view is myopic to an extent. His vision is bounded by the middle class and has no access beyond it, but like Jane Austen and Flaubert he cannot keep himself within his range. He has no scruples in writing even outside his range. The result is that when he draws the portraits of aristocrats like Sir Mulberry Hawk and Sir Leicester Dedlock, they become colourless abstractions. He lacked that divining faculty of Shakespeare whose kings and barons are every inch kings and barons.

Dickens is steeped in pathos which often borders on sentimentality. Consider for instance the death of Little Nell.[1] The circumstance of slow deterioration to death, that the novelist creates, is accompanied with the whole paraphernalia of pathology. The falling of the fog, and the gloom of the atmosphere mingling with the mournful church-bell form the powerful background against which the tragedy of death is to be enacted. Dickens himself, as there is evidence to show, would stain his pages with tears while writing a dying scene in his novels.[2]

The prose of Dickens was shocking to his contemporaries. They found it a revolutionary one. His style for them was mannered and affected which indicated only a want of literary education.

The failings of Dickens an as artist are very many, and if we are to trace their spring, we should go to that wretched and lonely boy working at the blacking factory, "who drooped down groaning at his work, who was hungry four or five times a week, whose best feelings and worst feelings were alike flayed alive,"[3] who was schooled in the streets of London under the open sky, and who had to endure hardships which

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[1] Charles Dickens : *Old Curiosity Shop*, Chapters Seventieth and Seventy-first, Ward Lock & Co., London.

[2] Says Truman Capote, quoted in *Writers at Work* in the Introduction by Malcolm Cowley, p. 15, Secker & Warburg, London, 1958.

[3] G. K. Chesterton : *Charles Dickens*, p. 36, Methuen & Co. Ltd., London, 1924.

were too much for the highly sensitive physical and mental constitution of a boy like Dickens. His failings as an artist are the result of these hard circumstances which worked upon him to develop a personality which psychologists regard as 'high-strung'.

It is a paradox that in spite of his flagrant faults as an artist Dickens should enjoy a popularity which has seldom been equalled in the history of literature. The truth is that in art and literature there is no touch-stone to help us in pronouncing judgement. If there is any touch-stone, it is the touch-stone of survival. If an artist or a literature makes himself survive by the force of his genius, then he is great, no matter howsoever imperfect he may be and Dickens survives in our age as he did in his own although the two ages are so very different.

This shows that the cause of a novelist's greatness is to be traced not in his artistic perfection but somewhere else, i. e., in the continued popularity and universal appeal. If we were again to investigate the cause of this universal appeal, we will find that two main causes lie at the root of it. The novelist must show concern for his age and for "Life" at large which is the very basis of all great art.

The popularity which Dickens enjoyed in his time was not an ordinary popularity. Chesterton writes, "In dealing with Dickens, we are dealing with a man whose public success was a marvel and almost a monstrosity."[1] It was so because Dickens always kept in view the reading public. He identified his taste with the taste of the people. He was facing the same baffling problems which his age was facing and was reacting to them in a way in which any sensitive and thinking person of the time would have reacted. The constant class struggle and the evils of industrial revolution had brought in their train despairing problems. The upper class of society was trying hard to maintain its supremacy, whereas

[1] G.K. Chesterton : *Charles Dickens*, p. 82, Methuen & Co. Ltd., London, 1924.

the bourgeois class was not prepared to accept the place of second importance. The lot of the lower rung of humanity was hard.[1] All the problems of the age and its demand were imprinted on the extraordinarily sensitive mind of the novelist and he turned them into artistic creations.

Dickens was the great democrat who championed the cause of the poor, neglected, oppressed and down-trodden, and claimed for them a place in this world. The compassion which he has shown for the common and the unclean, the savages and the social out-casts, will always remind the rich and the fortunate that these wretched human beings want to exist, no matter whatever the conditions of existence, because life is irrepressible, and they have a right to claim their notice. He attacked the ills and abuses that were rampant in the society and told the men at the helm of affairs that their duty lay in redeeming the masses from the rut of misery, slum, and ignorance. W. Walter Crotch observes, "According to the orthodox view of his day (i.e. Dickens's) poverty was a sin for which the individual rightly suffered. But Dickens traced the sin to society, and demanded justice for the individual, thus enunciating in literature the most revolutionary doctrine upon which the whole of the great working class movement of the nineteenth century was based...It is in his quality as a thinker, not less than in his power as an artist that we must find the source of his continued ability to away the minds of men, and which today makes him a living force wherever the English tongue is spoken."[2]

His audience wanted humour, farce, melodrama, story, sentiment, and picture of sweet homely life for the weary eyes to rest upon, and Dickens presented them all these things. His audience was not possessed of modern psycho-analytic taste. It was the audience in which the healthy and primary human

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[1] George Gissing: *Charles Dickens*, Chapter I, Blackie & Son Limited, London, 1898.

[2] W. Walter Crotch: *The Soul of Dickens*, pp. 82, 83, Chapman and Hall Ltd., London, 1916.

emotions and sentiments had not given place to sickly and artificially contrived ones. The novel as distinguished from other literary genres has the primary function of telling a story. The instinct to know about men and women who had a lot common to us all is as deep rooted as self-love itself. The audience of Dickens which had this healthy human instinct alive in it wanted story and Dickens told his stories with zest. He may be a failure in the plot-construction of his novels, but he is a master story-teller. He told his stories with animation and kept his audience spell-bound. When we charge Dickens of being farcical, melodramatic or sentimental, we forget the fact that he belongs to the class of artists which does not and cannot ignore the demand of the reading public. The scenes and situations which we regard sentimental or mawkish in him were much desired things in his age.[1] The ugly contaminating finger of industrialism was making itself felt in every walk of life. The commercial values were taking precedence over human values of life. People tried to fill the vacuum in their life by seeking overworked emotions in literature, of which they were denied in real life. Q.D. Leavis has observed, "Fiction for many people is a means of easing a desolating sense of isolation and compensates for the poverty of their emotional lives[2]." There is nothing uncommon if the contemporaries of Dickens were melted to ecstasies of tears on the fate of Little Paul, and found their hearts chastened and purified. The novel *Great Expectations* is an artistic failure for us because Pip is united with Estella at the end, but his audience would have resented an otherwise ending, because it would have been too bitter for them, and Dickens is a novelist who cannot be indifferent to the taste of his people.

He did not offer his people a philosophy he had brought from heaven or contemplated into an isolated ivory-tower. He offered something which was floating in the consciousness of

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[1] George Gissing : *Charles Dickens*, p. 176, Blackie & Son Ltd., London, 1898.

[2] Q. D. Leavis : *Fiction and the Reading Public*, p. 58, Chatto and Windus, London, 1932.

the age itself. He had merged his personality with the personality of his age, and hence whatever he wrote, his age found it dipped in its own blood. There is no wonder if his contemporaries read his novels with ready sympathy and a devotional frame of mind.

What endeared Dickens most to his contemporaries was his unique attitude towards his readers. There is no condescension or assuming of airs on his part. Chesterton says, "Dickens never talked down to the people. He talked up to the people. He approached the people like a deity and poured out his riches and his blood."[1]

A novelist cannot be really great if he is read only by the people of his time. To ensure greatness he must cross the barrier of time and space, and find favour with the universal reading public, i. e. the reading public which is spread throughout the world through the ages with certain common tastes, likes and dislikes. Dickens is a novelist who is liked and read by this universal reading public, because there is something in him which appeals to every human heart irrespective of country or age. This something is his profound devotion to the novelist's sacred duty. The real novelist is one who not only lives life but also loves it, because unless he loves it, he shall not be able to feel the beauty and thrill which is inherent in it, and unless he feels it he cannot give sincere expression to it. The novelist who fails in expressing and thereby communicating the beauty and thrill of life, fails in his primary duty as a novelist. Dickens not only loves life but also adores it, and he is all the time so much occupied with communicating to us the beauty, the rapture, and the ecstasy of life that he has hardly any time to care for the technique of his art. Somerset Maugham says, "The artist is absorbed by his technique only when his theme is of no pressing interest to him"[2] For Dickens his theme is of first importance to him, and that

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[1] G.K. Chesterton : *Charles Dickens*, p. 84, Methuen & Co. Ltd., London, 1924.

[2] Somerset Maugham : *The Summing Up*, p. 218, New York, 1939.

theme is "Life" or human predicament on this earth, which is the theme of all great novels or works of art. The self-preservative instinct of humanity rejects such art which revolts against life. The writer who finds the "time out of joint", and everything under the sun mean and ignoble, will be shunned by us. In spite of all the hardships of life we cling to this earth, and welcome the writer who sings of the joys of this earth, brings hope and inspiration for us, and pours the balm on our afflictions. Dickens belongs to this class of writers.

The secret of his universality lies in the fact that he accepts life with all its perfections and imperfections with a sense of gratitude. W. Walter Crotch says that for Dickens, "it is good for man sometimes to feel glad that he is alive, so glad that he forgets dignity and laughs at the clown; so glad that he can romp with the children; so glad that his merry laugh rings out to banish sadness from the dull old earth. This note of fierce, exultant joy in life, this note of confidence, of daring, of romance, and of adventure, that thrusts the cares of the day on one side and rejoices in the sunshine, or in the children that we meet playing in the street, or in the strange cries of the street vendor that has wakened us from slumber ; that revels in the gracious refreshing green of the trees glistening after some shower what time the birds are twittering; that delights in the comfort of the hearth, when those dearest to us relax into the smiles that suffuse like a benediction; that loves a good song well sung, or a quaint story well told; this pride in life itself should be the heritage of every human."[1] If Charles Lamb has shed tears of joy at the abundance of so much life in the motely Strand (a street in London), perhaps Dickens has shed no less at the richness, exuberance, and variety of life which he found in the greater Strand, the world. Throughout his work there is an undercurrent of joyousness born of the pleasure of living.

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[1] W. Walter Crotch : *The Soul of Dickens*, pp. 202, 203, Chapman & Hall Ltd., London, 1916.

Life for Dickens is a web of mingled yarn. He is not prepared to regard it as a "sorry scheme of things entire." The tears are there no doubt but he is not oblivious of the frolic and the fun, the gaiety and the laughter. J. B. Priestley finds in him a kind of "Poetry of the ludicrous."[1] He says that "Dickens must have made more people laugh than the sum total of authors in several literatures."[2] According to Chesterton, "the Dickens mirth is a part of man and universal."[3] So long man will have the sense for the odd and the ludicrous, the novels of Dickens will add a savour to his existence.

We hanker after the largeness of hope which a great writer brings in his work. The hope which Dickens holds out for us makes our hearts big. It is surpising that Dickens who had been made to feel what hardship and suffering in life is at an age when most children have no idea of it, should have turned an optimist. He knew the worst in humanity (which also he shows in his novels), yet believed in the best. It is difficult to find out his rival novelist whose faith in the essential goodness of humanity, the worth of individual, and the dignity of man is so profound. Alice Meynell, paying her tribute to Dickens observes, "Nothing distinguishes him so much as his trust in human sanctity, his love of it, his hope for it, his leap at it.'[4] Dickens believed that there was nothing superhuman, and humanity was capable of rising to any height. This conviction is at the root of the creation of characters like Joe Gargery, and Sydney Carton. "Are you dying for him?" asks the girl in a whisper, and Sydney Carton (the supposed Citizen Evremonde) replies, "And his wife and child. Hush ! Yes."[5] Sydney

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[1] J. B. Priestley : *English Humour*, p. 152, Longmans Green & Co., London, 1933.

[2] Ibid. p. 150.

[3] G. K. Chesterton : *Charles Dickens*, p. 86, Methuen & Co. Ltd., London, 1924.

[4] Alice Meynell : The essay "*Dickens as a man of Letters*" in XX Century English Critical Essays, p. 39, World Classics.

[5] Charles Dickens : *A Tale of Two Cities*, p. 142, Chapter XX, Macmillan & Co. Ltd., London, 1956.

Carton symbolises all that is noble and grand, and it is for ideals like these that we will never allow Dickens to go into oblivion.

Dickens will have a permanent hold on mankind because the values which his novels present are the values of the human race. In the words of Lord David Cecil his novels emphasise, "the paramount value of the primary, simple, benevolent impulses of man, his natural affections for home and mother and wife and sweetheart, his unconsidered movements of charity and gusts of gaiety, his instinctive wish to love and laugh and give and share."[1] We will cherish and imbibe these values in our life so long we want to remain human beings, and the day we forget them we will come to a strange pass.

The novels of Dickens have been regarded by W. L. Cross as "a tribute to the human species, to the vast army of beings, who live and struggle for a period and then fall unremembered to give place to others,"[2] and therefore they will ever serve as the perennial fountain of hope, courage and will to live. Dickens holds "Life" solemnly in both hands and tells us that it is difficult but essential to love life, and to love life is to worship God. We will have to return to him again and again to regain our confidence in the goodness and the future of mankind.

Dickens has the majesty and grandeur of bare and rugged mountains. He does not care for the appendage of art. Judged by the standards evolved in the laboratory of the twentieth-century theorists of the novel, he may be ascribed a low or no position at all among novelists. But judged by new norms, namely, the response of the reading public and the novelist's regard for life, he is a novelist of eminence.

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[1] David Cecil: *Early Victorian Novelists*, Chapter II, p. 53, Penguin Books, 1948.

[2] W. L. Cross: *The Development of the English Novel*, p. 188, The Macmillan Company, London, 1948.

TRIPARTITE STRUGGLE

An approach to the study of Indian History

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Indian History after the death of Harshavardhana has been studied heretofore more or less on a dynastic pattern. Sometimes it has also been studied under such nomenclature[1] which is not suitable for the study of Indian History at least for a larger part of India if not for the whole. This method lacks in proper perspective and prevents us in forming a general picture of the conditions of India under survey. It was perhaps inevitable in the beginning to start with dynastic histories but the time has come to shift our interest from the study of dynasties to that of inter-relations between them and the movement of politics and culture as a whole.

The observations at the very outset make it necessary to consider the question as to why this dynastic pattern of study has been preferred by Historians for the study of Indian History after the death of Harsha ? Is it because our study of this period was in initial stages or because this period is devoid of any central theme ? To answer this question let us have a brief survey of the conditions of India from the death of Harsha to the beginning of the Tripartite struggle - the subject of our study.

With the removal of the strong personality of Harsha forces of disintegration and disorder were let loose in Madhyadeśa. The affairs of the kigndom of Kanauj were in a pitiable state. No doubt, Yaśovarman tried to restore the fallen fabric of imperialism and win for Kanauj the proud position which it once had. But these efforts were frustrated by the invasions of the Kashmirian Kings who seem to be the strongest among the

[1] "Age of imperial Kanauj"
"Glory that was Gurjaradeśa"

contemporaries and who in course of their campaigns conquered Kanauj and advanced as far as Gauḍa land. A very vivid description of the exploits of Lalitāditya and his grandson Jayāpīḍa Vinayāditya is given by Kashmirian poet-historian Kalhaṇa.[1] These exploits were the indications of the absence of any strong government in Madhyadeśa which could check effectively the advance of the Kashmirian armies and protect the Kingdom of Kanauj. An analysis of the political conditions of India of this period shows—

(i) That from the death of Harsha to the rise of the Prātihāras there was no strong and stable government in Madhyadeśa ;

(ii) That this period was not devoid of great conquerors but lacked in that unifying force which is so very necessary for stability to the government;

(iii) That the imperialism of this period did not aim very much at extension of empire as to the establishment of superiority. Thus the Kashmirian Kings though advanced as far as Gauḍa did not bring about actual annexation of the conquered territories.

(iv) That the imperial schemes though sometime aimed at Kanauj were not always for the same.

(v) That the Deccan too seems to have continued to play its part in North Indian politics. The Chālukyan Kings Vinayāditya and Vijayāditya invaded Northern India and revived the military traditions of the great Pulakeśin II.[2]

The reason for the dynastic approach to the study of Indian History of this period seems to be the impact of the notion that Harshavardhana was the last empire-builder of Ancient India and that after his death organised political life

[1] Rajataragani. IV.

[2] I. A. IX p 129. Classical Age pp. 245-6

of India was completely broken down.[1] This has been followed by a number of writers both European and Indian. But a careful examination of the facts will show the utter hollowness of the proposition. As well pointed out by Dr. H. C. Ray "the death of Harsha marked no epoch in the history of the Deccan and the far South which continued to flourish as before. There is no doubt that Harsha was the most considerable prince of Northern India. It is proved by the epithet Sakala-Uttarāpatheśvara applied to him by his enemies the Chālukyas. But we must learn to differentiate between the most powerful King of Northern India and the Emperor of Northern India.[2] We are informed that Harsha could not subjugate or prevail over his powerful southern rival Pulakeśin II who had justly won the title दक्षिणापथपृथिव्या: स्वामी.[3] The inscriptions of the Gurjāras of Broach mention the fact that Dadda II obtained great glory by proctecting the Lord of Valabhī who had been overpowered by the great Lord, the illustrious Harshadeva.[4] We shall see later on that some of the Pratihāra emperors ruled over an empire more extensive than that of Harshavardhana. In view of this position it is not correct to say that Harshavardhana was the last great empire-builder of ancient India.

Now we come to the second part of our problem. Is Indian History after Harsha's death devoid of any central theme? This does not seem to be the case. There is a section of historians who believe that after the downfall of the Magadhan empire the centre of political gravity was shifted from Pāṭaliputra to Kanauj. This view believes that the imperial schemes of this period were directed towards the possession of this imperial centre. We propose to examine this view in some detail. Pāṭaliputra was undoubtedly the greatest centre of politics and culture. It was the capital of the Mauryan empire which brought about practical unification of India. This unification of India is an event of great importance in the history of anci-

[1] Smith—Early History of India, p 370, Fourth Edition.

[2] Ray: Dynastic history of Northern India, Vol I, Introduction.

[3] Watters, II, p 239: Beal II, p 256; E.I.V, p 7, 8.

[4] I. A. XIII p. 77-79

ent India for after the downfall of the Mauryas India was never united under one sceptre. After the Mauryas with the development of other routes for trade the centres of political activity were already shifting to the Deccan and other parts of India. Even during the time of the Śungas Pāṭaliputra had a rival in the city of Vidiśā where the crown prince Agnimitra held his court.[1] Pratisthān is famous in literature as the capital of Sātavāhanas who rose to prominānce after the Śunga-Kāṇva period. According to Hiuen Tsang the great empire over which Kanishka exercised his sway had its capital at Purushapura. Ujjaini is yet another name. It was the capital of the Pradyotas and under the Mauryas the capital of Avantirāshtra. It served as a second capital under the Guptas. It is associated with the name of Vikramāditya, the great patron of Kālidāsa and is still one of the seven holy places of Hinduism. Thus it appears that after Pāṭaliputra no single centre can claim an all India status. In fact Indian History hereafter has been shaped through various centres of gravity which rose to prominence in their respective times and have played their respective roles in the developement of politics and culture of India. The view, therefore, that the struggle between the Maukharis of Kanauj and the latter Guptas ended in transferring the centre of political gravity from Pāṭaliputra to Kanauj needs rethinking. It is difficult to prove that the course of Indian History as a whole was dominated by Kanauj as it was by Pāṭaliputra in previous epochs.[2]

A critical examination of the sources over which such a view is propounded becomes necessary before we consider any other alternative which can well serve as a theme through which Indian History of these times can be studied.

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[1] The importance of Vidiśā was due to its central position on the lines of communication between the sea-ports of the western coast and Pāṭaliputra and between Pratisthān the western capital of the Andhras on South-West and Śrāvastī on North-East. C. H. I., Page 471, Vol I.

[2] Even Pāṭaliputra after the Mauryas began to lose its all India status. But so great was its name that it invited the invasion of the Bactrian Greeks, the Kushāṇas, the Mahāmeghawāhanas and the Guptas. It is interesting to note that as late as 9th century A. D. the Pālas of Bengal held their court at Pāṭaliputra.

Dr. R. C. Majumdar in his preface to "The Age Of Imperial Kanauj" writes "under the Pratihāras Kanauj rose to be the finest city in the whole of India. This circumstance has suggested the name of the volume." It is very difficult to agree with this proposition. If at all there is any such age of the imperial Kanauj it should be considered from the times of Harshavardhana and Yashovarman when Kanauj gained enough significance and not from Indrāyudha whose role in history is insignificant. There is no doubt about the imperial status of Kanauj. The point is whether it constitutes an important landmark for the study of Indian History as a whole.

Kanauj no doubt is in the central position of the upper Gangetic valley. But even more important is the whole of the Gangetic valley. The Sātvahānas of Pratisthān, the Mahāmeghavāhanas of Kaliṅga, the Chālukyas of the Deccan realised that the imperial sway could be maintained only if they controlled the Gangetic valley. This can be very well explained by the fact that the conflict between the three powers under study generally took place in this valley. It is frequently referred in the contemporary inscriptions. The victory of Dhruva Rāshtrakūta in this region is shown by the figures of Ganges and Jamuna on his seal. There is no evidence to show that Dhruva and Govinda III aimed at Kanauj. It is only at the time of N. I. expedition of Indra III that Kanauj finds mention. In the same way Dharmapāla of Bengal though sometime in possession of Kanauj could not annex it to his empire. This position of the Gangetic valley was well recognised by Rājaśekhara thus:

"The teritory between Ganges and Jamuna and from Vinaśana to Prayāg is Antarvedi and with reference to it directions should be given according to Āchāryas. But Yāyāvara thinks that even in Antarvedi they should be given with reference to the city of Mahodaya."[1]

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[1] गंगायमुनयोर्विनशन प्रयागयोरंतरमंतवदी । तदपेक्षया दिशो विभजेतेत्याचार्याः तत्रापि महोदयमवधीकृत्येतियायावरीयः । काव्यमीमांसा सप्तमोध्यायः

Following him Al Baruni writes–

"The chief part of Hind is the middle land. The Persians call it Kanauj. It was the capital of the great, haughty and proud despots of India. In stating distances we will begin from Kanauj."

It seems quite natural for Rājaśekhara, the court-poet of the Pratihāras of Kanauj, to glorify the imperial capital and to differ with the ealier Āchāryas to whom Antarvedi was more important in this respect. The tripartite struggle between the Pratihāras, Pālas and Rāshtrakūtas seems to have been caused for the control of the Gangetic valley. The Prithivirājavijaya[1] states that Durlabharāja I Chauhāna bathed his sword at the confluence of the Ganga and the ocean and enjoyed the Gauḍa land. As his son Guvaka I was an honoured courtier of the Imperial Pratihāra Nāgabhaṭṭa II, this should be taken as a reference to the success achieved by the Chauhānas in Bengal under the banner of their overlord, Vatsarāja, the father of Nāgabhaṭṭa II. The Jodhpur inscription[2] of Bāuka describes Kaka as distinguishing himself at the battle of Mudgāgiri. There is reason to believe that Kaka proceeded as far as Monghyr only to help his suzerain in a conflict that was to decide the fortunes of the Pratihāras. The Catsu Inscription of Bālāditya speaks of Samkargana as having defeated the king of Gauḍa. As pointed out by Dr. R. C. Majumdar this Samkargana must have been a contemporary of Nāgabhaṭṭa II. Thus these epigraphic sources point to the fact that the struggle between the Pratihāras and Pālas had wider motives. It was a struggle for the control of the whole Gangetic valley and hence the march of the Pratihāras upto Mudgāgiri and the Ganges-ocean confluence. Their feudatories wholeheartedly accompained them in their mission and even distin-

[1] असिः स्नातोत्थितोयस्य गंगासागरसंगमे ।
चिरं गौडरसास्वाद शुद्धो व्राह्मणतां ययौ ।।
पृथ्वीराजविजय पंचम् सर्ग : श्लोक २०

[2] ततोपि श्रीयुतः ककः पुत्रो जातो महामतिः ।
यशो मुद्गागिरौ लब्धं येन गौड़े समं रणे ।। E. I. XVIII p 98.

guished them in the encounters which followed. With the Rāshtrakūṭas the case was quite different. Their imperialism had two aspects : To achieve supreme position in the South as well as in the North. Their affairs in the South did not give them enough time to care for the North. They were the strongest military power of the time and hence they could invade the Gangetic valley several times. Except once they never aimed at the conquest of Kanauj. Dr. D. C. Sarkar has well pointed out "that the theory about the so called tripartite struggle for the occupation of Kanauj which has acquired a halo of imperialism like Delhi in later days involves certain unproved guesses. The struggle between the Pratihāras and Rāshtrakūṭas could hardly have been one for the occupation of Kanauj as it started with the foundation of the imperial house in the middle of the 8th century A. D. long before the Pratihāra occupation of that city. It is again not easy to prove that Kanauj acquired a halo of imperialism before the age of the Pratihāras."[1]

The foregone discussion shows the hollowness of the proposition that Kanauj gained an all India status after Pāṭaliputra and that there is an age of imperial Kanauj. This view is not sufficiently supported by historical evidences and hence we should try to investigate if there is any other theme through which Indian History after the death of Harshavardhana can be best represented. In the tripartite struggle we have such a theme through which a new approach to the study of Indian History can be made. Historians agree with regard to the importance of this most signifiant and interesting factor of the period of Indian History under study. Leaving far southern States it has influenced almost the whole of India. It is also remarkable for the role of the Deccan in the politics of the North. The repeated Rāshtrakūṭa invasions of North India of this period are constant reminders of the past and the fact that inter action between the North and the South was a constant and important factor in the historical and cultural development of India. Politically speaking the spirit of this age was the

[1] Proccedings of Indian History Congress, Vol. 11, pp. 117-118.

triangular struggle between Pratihāras, Pālas and Rāshtrakūṭas for all India supremacy. The ancient ideal of a Chakravartin does not seem to have visualised during this period of Indian History. It is very amusing to go through the inscriptions of this period where rulers make high exaggerated claims about the extent of their empires.[1] The inscriptions of the contemporary dynasties do not justify such claims. Rājaśekhara calls his patron Mahipāla the Mahārājādhirāja of Āryāvarta but the epigraphic sources show that it was during his time the imperial city of Kanauj was sacked and the army of Indra III over-ran the Gangetic valley. The Rāshtrakūṭa records style Kṛishṇa III as सकलदक्षिणदिग् अधिपतिः. But his attempts towards north were no match to that of his predecessors. It is said of him that during his regime the seeds of the decline and downfall of the Rāshtrakūṭas were sowed.

The centrifugal tendencies seem to be seriously at work during this period. The contemporary inscriptions will show that kingdoms are not mentioned with reference to the dynasties ruling over them but in respect of their geographical positions. India under one umbrella became a past vision. No attempt seems to have been made for the political unification of India. The effects of this change of political concept can be very well seen in the life of the country as a whole.[2]

The study of this particular period, therefore, needs reorientation of approach. We have to answer some basic questions which this age raises. What was the underlying spirit of this age? If the tripartite struggle was the dominating factor of this age then what was its purpose ? Is it possible to make it the central theme for the study of Indian History of these times ? If it is possible then is it not equally possible to draw a fundamentally new line for the study of Indian History after the death of Harshavardhana and to provide new direction to the study of Indian History hereafter ?

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[1] Monghyr Grant of Devapāla, V. 13, 15.
Rashtrakūṭa Grants.

[2] The Pratihāras resisted the Arab invasions while the Rāshtrakūṭas sought their assistance against the Pratihāras.

ECONOMIC MOBILISATION FOR DEFENCE*

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This paper is an attempt at estimating the requirements of defence against ruthless Chinese aggression and suggesting alternative means for raising the resources to this end. The implications of raising the resources by such means are also examined.

Given the persistent nature of the threat to which we are exposed, defence and economic development is to go hand in hand ; mobilisation for defence has to be superimposed on the equally vital need for mobilisation for development. We, however, assume that the minor skirmishes will not turn into a wholesale war between India and China. Much of the military hardware including aircraft for this national holding operation will be coming from friendly foreign countries on lend-lease terms, or as outright gifts. And we, far from equipping our army with costly nuclear weapons, shall modernise it with such equipments which shall bring it at par with the Chinese forces.

The Extent of the Requirements :—

The Chinese are reported to have an active army of 2.5 millions, a reserve force of 4 millions and an air force of 3000 planes. Tentative estimates suggest that the nation will need a minimum of 1.5 men under arms in various categories and a more sizable airforce to meet the threat from the Chinese. The present strength of Indian Armed Forces have been

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estimated to be of the order of 5 lacs, on which effective expenditure (excluding Rs. 21 crore under the head non-effective expenditure viz. Rewards, Pensions etc.) in the 1962-63 budget comes to Rs. 322 crore.[1] Out of Rs. 322 crore Rs. 128 crore i.e. about 40% of our Defence Budget are spent on Pay and Allowance. The average proportion of Pay and Allowance in certain well-balanced armies, as calculated by Dr. A. N. Agrawal, has been found to be of the order of 20 percent of the total defence budget. If we take it as a rough basis for getting an idea of the dimension of the expenditure involved in modernising the army our total expenditure should have been of the order of Rs. 640 crore. Now in order to increase the strength of the army to the projected minimum target of 1.5 million Jawans in the force, the expected expenditure on defence would be of the order of Rs. 1962 crore per annum. Since the steps to recruit 1.5 million people to the armed forces and the training and equipping of these men would take a few years to go through, the full burden of defence mobilisation may not be felt until after two or three years. We, therefore, distribute this amount over the remaining three years of the Third Plan till we increase the strength of our army to this extent. If we deduct out of it the current expenditure of Rs. 322 crore on defence and a tentative sum of Rs. 400 crore as the value of planes, radar and other equipments supplied by friendly foreign countries as outright gift or on longterm lend-lease basis during the Third Plan period, the expected defence bill comes to an additional amount of Rs. 1200 crore i. e. an average of additional Rs. 400 crore per annum, which is very close to the provision for defence in the budget for 1963-64.

The defence would thus account for six percent of the National Income (excluding Military assistance received from

[1] Out of Rs. 322 crore Rs. 225 crore are spent on army, Rs. 19 crore on Navy and 78 crore on Airforce. Although Navy is not so important from the point of view of war against China we can have a good plea to develop it as a merchant shipping to help the war indirectly.

friendly countries) as against 2.5 percent at present. Still our defence expenditure will be modest in comparison to the defence expenditure of other countries in their peace time economies and much more modest in comparison to their defence expenditure in their war time economies. Today, of the gross domestic products, the U.S.A. spends 10.5. percent, the U.K. 8 percent and France 6.2 percent on defence. In Asia, Malaya spends 3 percent, Indonesia 4.6 percent, Israel 6.3 percent, South Korea 7.4 percent, Thailand 3.8. percent, Pakistan 3 pecent.[1] In second World war the ratio of Defence expenditure to National Income was as high as 52% in U.K. and 45 percent in U.S.A. In India also this percentage was very high during this period. The calculated ratio of 6 percent of defence expenditure to National Income, therefore, is not high when we are dragged on the brink of war.

Mobilisation of Resources :—

The mobilisation of resources of even this magnitude is a difficult task for our country in view of our low rate of saving, inflationary pressures in the economy and the chronic persistent balance of payments crisis. Our present rate of saving is 8.5 percent of the National Income. We have envisaged a saving of 12 to 13 percent of National Income for our development by the end of Third Plan. If we add 3 percent of additional saving for defence, it comes to about 16 percent of our National Income. During the two plan periods we have stepped up the rate of saving from 5 percent to 8.5 percent only. It would not be easy for us to increase the rate of saving from 8.5 percent to 16 percent within a short span of 3 years. The inflationary pressures that have gathered sufficient momentum during the period of Second Plan due to heavy doses of deficit financing has made our task almost invulnerable and any further resort to it may throw the

[1] It should be noted that in the last two countries the actual expenditure is more as the Military assistance received by them as partners of the Military Alliances is not fully reflected in their budgets.

economy out of gear. The taxable capacity of the majority of people has been reduced and our exports are adversely affected. Our foreign exchange reserve is reduced to a nominal figure of Rs. 246 crore. The present emergency is bound to aggravate this crisis further. There will be need for greater imports in several directions. Despite the general military support we are receiving from friendly countries additional imports will be needed to strengthen our defence and expedite our defence production. We can step up production in the already built up metallurgical, engineering and chemical industries. Such a course would need higher imports of materials, components, spares and the like. There is, therefore, no scope of financing the war through inflation and foreign exchange reserve.

How to finance war then ? It is clear that we have not to take recourse to inflation for finacing war; we have to adopt counter-inflationary measures. We have not taken such measures which would deplete our foreign exchange reserve further. We have to swell it by either cutting down few of the imports or promoting exports to finance the increased imports of strategic commodities. Obsessed with these considerations, our Finance Minister had to concentrate on additional taxation, compulsory deposit scheme and deficit financing of a small order. While the proposals in the budget for 1963-64 for a surcharge of 10 percent on all imports (in addition to higher duties on a range of articles) with a net yield of Rs. 87.39 crore; restriction on pay and perquisites that company could incur on employees with an yield of Rs. 12 crore ; higher excise duties on petroleum products, cigarettes, copper, steel blooms, billets etc., surcharge on dyes, paper, glass, motor cars, electric goods, rayon, woolen yarn, radios, airconditioners, etc. and inter-state sales-tax with a net yield of 81.11 crore and compulsory deposit scheme with an yield of Rs. 12 crore (revised) being revenue-seeking are worth implementing in an underdeveloped mixed economy like ours; the proposals for a super-profit tax with an yield of Rs. 25 crore; surcharge varying from 4 percent to 10 percent

on all incomes and 20 percent surcharge on income of the registered firms with an yield of 12. 4 crore; additional excise on kerosene with an yield of Rs. 27 crore; and expansion of treasury bills of an order of Rs. 151 crores are open to objections. Super-profit tax, while retarding national savings and the national product might at the same time cripple the capital market. First in an effort to avoid the tax by maintaining profits at the six percent exemption limit, it might induce extravagant expenditure and artificial inflation of costs by corporations. Secondly, the market rate of interest being much above 6 percent, it may throttle the establishment of new enterprises or the expansion of the existing one by raising fresh capital. Thirdly, it may further depress share values which have already lost heavily during the past one year, the index of the variable dividend industrial securities in mid-February being about 13.5 percent less than in March 1962. This may divert savings from the capital market into socially less productive chanels , especially as equities would no longer provide a hedge against inflation. It may also slow down the inflow of foreign investment.

An additional surcharge of 4 percent to 10 percent on income and 30 percent surcharge on income-tax payable by registered firms are on the heavy side. They hit a class supplying either the initiative, enterprise and funds or the technical and executive ability for development. At this level the tax burden in India is already heavier than in most other countries.

An additional excise duty on kerosene would fall mostly on poor people. The tax on kerosene, it is argued, is intended more to restrict its consumption in order to save foreign exchange than to tap the poor. But it is doubtful. The demand for kerosene is largely inelastic and additional taxation is not likely to restrict its consumption.

The proposal to use deficit financing to the tune of Rs. 151 crore at the present juncture is not desirable. This is, moreover, likely to increase by Rs. 28 crores because of the

revision of compulsory deposit scheme; there is hardly any scope for an increase in voluntary savings as visualised by our Finance Minister. This will distort the price level further.

I therefore, venture to suggest that proposals for imposing;

(a) Super-profit tax with an yield of Rs. 25 crore ;

(b) An additional surcharge of 4 percent to 10 percent on income and 20 percent surcharge on income of registered firms with an yield of Rs. 33 crore ;

(c) An additional excise duty on kerosene with an yield of Rs. 27 crore ; and

(d) Deficit financing of an order of Rs 151 crore, be dropped. We can make up this loss of Rs. 263 crore by (a) utilising depreciation reserves and (b) making a change over in the system of the distribution of import licences. We can thereby avoid any of the adverse consequences.

(a) Utilisation of Depreciation Reserves

The excess of depreciation reserves over the replacement needs is a constituent of national income. For an individual firm depreciation reserves are not an income. But for a developing economy, as has been shown by Domar[1], a portion of it is constant sourse of income. The higher the rate of growth the higher the proportion of depreciation reserve is income.

Let us suppose in an economy the new investment in the first year is Rs.1000/- million wroth and every year it increases at the rate of 10 percent. Let the depreciation allowance be calculated at 10 percent of the written down value on those items of the fixed capital that were not scrapped in that year and equivalent, to the whole of the written down value of others. If the life of fixed capital is say 10 years then for first 10 years there will no demand for replacement, while the amount of depreciation collected will be Rs. 100 million in the

[1] Domar :—Depreciation, Replacement, and Growth, Economic Journal, 1953.

second year rising to Rs. 985 million in the tenth year. All this can be appropriated by the community without any harm to the business. In the eleventh year there will be demand for replacement of Rs. 1000 million worth a capital put up in the first year. But the depreciation amount collected will be Rs. 1,471 million leaving Rs. 471 million as the extra amount available. Similarly if the life of the fixed asset would have been 12 or 15 years, the percentage of depreciation available for other uses after 12 or 15 years would have been 40 percent and 54 percent respectively.

This is a source that has not been tapped so far any where. Mechanism of its utilisation is simple. All the firms may be asked to deposit depreciation reserve with the Government at the usual rate of interest. They may be allowed to draw from this account only when the replacement has been granted and arranged for. According to Domar Law, incomings in this account will be more than out-goings in each year; which implies that accumulated reserves could be used up completely each year without any default from this fund.

This source can be tapped in our country. Ours is a growing economy. For five to ten years there is likely to be hardly any demand for replacement as most of our buildings, plant and machinery in our industry are comparatively quite young. In an emergency particularly we can stop replacements. The income from this account may be of the order of Rs. 120 crore every year.[1]

(*b*) *Earning from import licences*

To this may be added to an order of Rs. 150 crores if we sell import licences by auction on the analogy of treasury bills, instead of distributing them free of charge as hitherto.[2]

Conclusion :—

To conclude it may be said that our defence expenditure of 6 percent to national income is justified by any standard.

[1] Reserve Bank of India Bulletin, June, 1962,

[2] Prof. B.R. Shenoy; Way to Finance War Effort, Northern India Patrika, Jan. 16,1963, Page 4.

But the mobilisation of resources of even this magnitude is a ticklish task for our country because of our inability to make use of some traditional tools of war finance. We, as it is the situation in the country, cannot use inflation, without doing harm to the economy. Nor can we take resort to some of the measures suggested in the budget for one reason or the other. Foreign Exchange Reserve has already reached its rock bottom and cannot and should not be depleted further. This, however, does not mean that we cannot put up the strains of the war. The country today is economically stronger than ever before. What is, therefore, needed is to tap new resources for raising the required finance. Given the readiness of our people to undergo hardships and to make sacrifices, the suggested means may be able to mobilise the resources sufficient to meet our defence requirements.

ATMOSPHERIC OZONE AND ITS METEOROLOGICAL SIGNIFICANCE

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The atmosphere which envelopes our planet is composed of several gases. In the middle of 19th century attempts were made to prove that ozone is a constant constituent of the atmosphere. It is, however, well-established now by spectrographic methods that principal quantities of ozone are present in the upper strata, namely stratosphere, of the atmosphere between 15 and 45 km height.

The atmospheric layer having the maximum ozone concentration is called the ozonosphere and efforts have been made to scale its height and the total amout of ozone in it. Although the total quantity of ozone present, when reduced to standard conditions, of temperature and pressure amounts to but a few millimeters, this small trace is nevertheless of great significance in affecting the various meteorological phenomena, solely due to its enormous absorption in ultraviolet region of solar radiation.

In view of its intimate relationship with weather processes, the study of ozone provides method of indirect aerology. There is an ever-increasing tendency of supplimenting a mere observation of total amount of ozone with a detailed measurement of its vertical distribution and changes thereof. Many meteorologists have had been working on ozone problem and the studies in atmospheric ozone now form one of the major fields of research work. The sole impetus behind these spirited works is definitely the prospect of using detailed data regarding ozone in the atmosphere for predicting and forecasting the weather. Untiring efforts have been performed to seek some correlation of ozone distribution with different physical phenomenon like those with the pressure distribution, terrestrial

magnetism, temperature, sunspot numbers, sun's incoming radiation and consequently with the weather in general.

The agencies, likely to produce ozone in large quantities in the atmosphere, are :

(1) Ultra-violet light from the sun.
(2) Electrical discharges in the Aurora.
(3) Electrical Discharge in Thunderstorms.

The observations of Rayleigh and Götz show that there is very little ozone in the lower atmosphere and indeed, one would hardly expect that much ozone could exist in the troposphere in the presence of atmospheric dust, some of which is oxidisiable to decompose ozone into oxygen, so that the ozone can hardly be formed by thunderstorms.

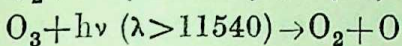
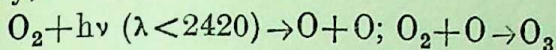
If the ozone be formed by aurora, it will probably be formed at heights above 100 km, while if it is formed by wave-lengths of the sun's ultraviolet radiation, which are absorbed by oxygen, it must be formed at height above 40 km. Some later observations give an effective height of 50 km but the close connection with the pressure at about 10 km indicates that a considerable portion must be at a much lower level for there is good evidence that the pressure-changes due to the cyclones, and anticyclones donot extend above about 20 km. It has been shown that oxygen is transformed into ozone by shorter wave-lengths and that ozone is decomposed again by (at least some of) the longer wave-lengths which it absorbs.

If the ozone be formed by the action of ultraviolet light from sun, there will probably be a region at about 40 to 50 km, where the ozone concentration would be governed by the equilibrium between the rate of formation by the shorter wave-lengths and the rate of decomposition by the longer wave-lengths. From this level it will probably sink down owing to its high molecular weight.

To a casual observer it may strike as to why and how is it possible for such a relatively heavy component of air to maintain itself high in the atmosphere ? Only if it is constantly being regenerated by shorter wave-lengths and

destroyed by longer wave-lengths of sun's radiation and hence involved in a spontaneous chemical ozone equilibrium in the upper layers of the atmosphere at a height of about 15 to 30 km. There are two primary photochemical reactions, namely,

$$O_2 + h\nu \ (\lambda < 2420) \rightarrow O + O; \ O_2 + O \rightarrow O_3$$

$$O_3 + h\nu \ (\lambda > 11540) \rightarrow O_2 + O$$

Where $h\nu$ is energy of a photon of light and λ is the wave-length. The distribution, height and variations therein of the atmospheric ozone is considered to be the ultimate cause of weather phenomenon. There are two possibilities, that is, either different meteorological processes cause variations in the amount and height of ozone or these variations itself cause meteorological phenomenon. But one thing is more or less definite that there is some correlation between them.

Although several methods have been tried for determination of ozone distribution, some of them are very crude. Two methods, which are available for the estimation of vertical distribution of ozone, are generally used by different observing stations in the world. They are :

(1) Umkehr-curves method.

(2) Techniques using Recording Baloons, Stratospheric Balloons and V-2 Rockets.

The method introduced by Götz has been called by him the "Umkehr effect" (reversal), because of the characteristic shape of the curves when the logarithm of the ratio of the intensity of the zenith light at two wave-lengths (usually 0.311 & 0.329 micron) is plotted versus the 4th power of the zenith angle of the sun. The variation of Umkehr function with the zenith angle depend on the type of stratification, that is, the vertical distribution of ozone. It thus, provides a means for measuring vertical distribution. See fig. (1).

In addition to rather indirect method involing the Umkehr effect, there is of course the challenge of sending spectrographs to ever-higher altitudes until finally ozone layer is penetrated with the help of Balloons or Rockets.

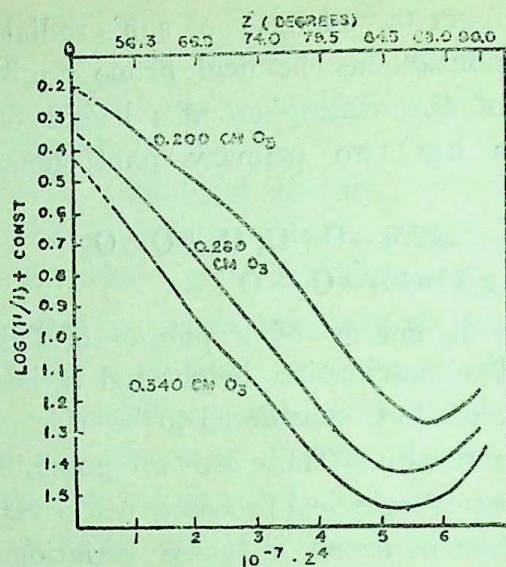



Fig. (1) Umker Curves

There, however, arises one contradiction between the records made by Umkehr effect and those by V-2 Rockets as can be seen in Fig. (2). This anomaly has to be very critically thought of. Before making out any conclusion one must see

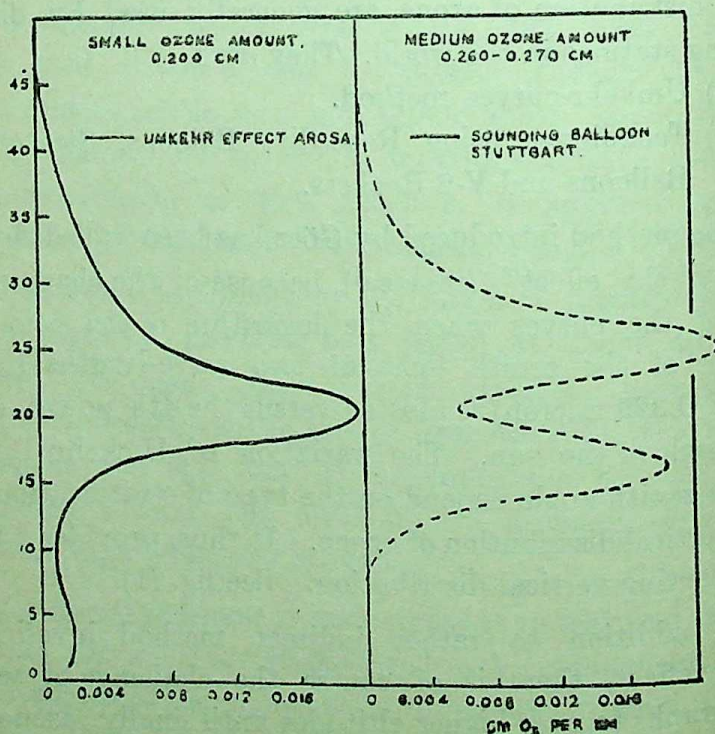



Fig. 2 Vertical Ozone Distribution.

whether there is something lacking in the efficiency of Umkehr effect curves which results in its ignoring the separateness of two layers of ozone, or the Rocket Spectrograph studies are fictitious. If these two separate layers, i. e., primary and secondary existed at all, how is it possible for two layers of same composition to occupy different levels in the atmosphere ? A few explanations have been put forward but they are contradictory to each other. The explanation probably will be that there is set up a high temperature-gradient between the primary ozone layer on sun illuminated part and that on shadow zone in polar nights. The ozone layer in the shadow zone in polar nights cools, so that its density increases and consequently it comes down producing a fault like aspect against the ozone layer on the sun illuminated part of atmosphere which is at higher temperature. The colder secondary layer now creeps down the primary ozone layer due to horizontal flows in the atmosphere and after sometime when it attains the same temperature and hence the density in the sun illuminated part of atmosphere, as the primary layer, they are mixed together. So it is quite possible that secondary layer of ozone, conspicuously marked on the Rocket spectrographs is continuously generated and degenerated by mixing with primary layer. But one question is still hanging that why Umkehr curves could not mark out separate primary and secondary ozone layers. This requires more critical thinking in this direction so as to modify Umkehr curves to such an extent that they may have sufficient resolving power or to find out some other more fitting fact regarding this anomalous feature in the distribution of ozone in the atmosphere.

There had also been a tendency to prove the diurnal, annual and secular variations in the ozone distribution and their consequent bearing on the weather phenomenon. A regular slight daily variation of ozone has so far been reported only from Delhi, showing a maxima in day time and minima in the night. But if the physical conditions like temperature and pressure variations are corrected for, the diurnal variation.

is simulated, hence diurnal variations are not yet well confirmed.

During a period of some months (May & August) there was indication of 27-day period such as might be associated with the period of revolution of sun. However if changes apparently associated with barometric pressure variations are eliminated, this periodicity largely disappears and upto present there seems no definite evidence of such a period, though the apparent connection with sunspot and magnetic data would indicate that such a period was not improbable.

Concerning the annual variation of ozone amount we are quite well informed by the extensive observational network of Dobson. The representation as a yearly sine-curve in fig. (3) with an amplitude which increases with latitude from a value of zero at the equator and maximum at middle latitudes (at 70° nearly), indicates the overlapping five-day averages of the extensive measurements at Arosa (1926-46) and Tromsö (1939-48). At Tromsö an almost sudden linear increase in January & February is followed by a gradual decrease terminating in an "Ozone Gap" and at the end of December.

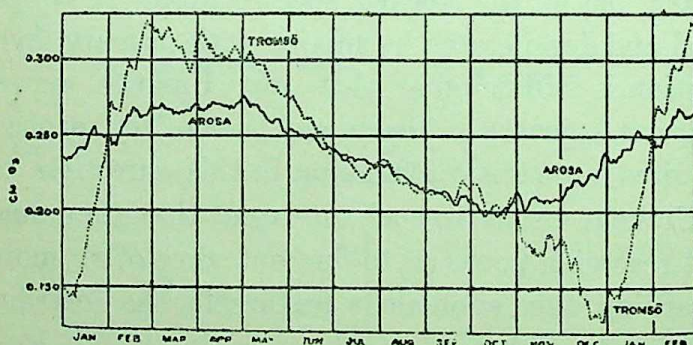



Fig. 3 Annual variation of ozone.

As regards the secular variation, that is, ozone variation from year to year, Fowle's hypothesis concerning the correlation with the relative sunspot number was untenable probably due to lack of data over longer periods. The secular variations for the 20 year series at Arosa reveals waves of several years length. For our further conclusions we might wish to have such figures back to ice age.

It is also likely that there may exist some connection between amount of ozone and the solar activity. By comparing the data of sunspot numbers and that of ozone amount, it has been seen that high sunspot number seem to be associated with low ozone values.

Humphries has suggested that the lower average temperature of many part of the earth at times of sunspot maximum may be explained by smaller amount of ozone in the upper air owing to the ultra-violet light from sun being reduced by scattering in the corona which is more extensive at times of sunspot maximum. This theory has serious setbacks because corona does not appear as brighter if it absorbs and scatters the ultra-violet light. Moreover, there is a definite evidence of greater rainfall at times of sunspot maximum and since the sign of temperature correlation is positive in extremely dry localities, it may well be that greater cloudiness and rainfall produce low temperature.

Dr. Chree and others have shown that ozone also appears to be connected with terrestrial magnetism, days with large values of ozone being associated with days of high magnetic character. From this it is interesting to expect days with many sunspot to be associated with days of much ozone. It may, therefore, well be regarded the existence of a relation between ozone and sunspots as still uncertain.

A preliminary examination to seek any correlation of ozone with solar constant does not show any promise.

Ozone and Weather

According to Dobson, it now goes without saying that the amount of ozone varies with the atmospheric pressure distribution, that is, with the synoptic situation. In Western Europe a maximum in the ozone amount is found on the rear side of a cyclone, a minimum of ozone is found above the s. w. side of a high, i. e. an anticyclone. More recent studies concerning the connections between ozone amount and the surface weather map and fronts have supported this observation and have

shown that the centre of high ozone amount on the rear side of a cyclone is particularly the property of a newly developing depression. See fig. (4).

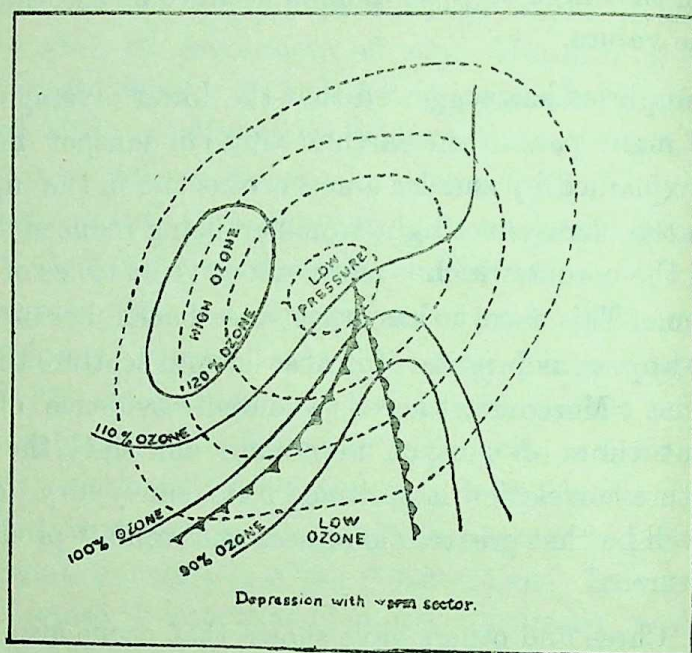



Fig. 4 Depression with warm Sector.

Studies of air motion in the stratosphere show that air entering upper-level troughs associated with surface cyclones suffer both descending and converging motion. The ozone present in the air moves, therefore, with the general air motion to lower elevations. Meanwhile, the air above 30 km has lost ozone to lower levels, but the equilibrium amount of ozone is quickly restored in this region by photo-chemical action. The subsidence process, therefore, leads to an increase in the total amount of ozone in a vertical column. By the same analysis, upward motion causes all ozone in excess of the equilibrium amount to be rapidly destroyed in passing to levels above 30 km; yet creating no new ozone at levels below 30 km. The effect of upward motion in the high stratosphere is to decrease the total amount of ozone in a vertical column.

Concurrent with vertical velocities in the atmosphere is also horizontal motion which can likewise transport ozone from

regions of high ozone content to regions of low ozone content and *vice versa*. However, as in most meteorological studies it is difficult to determine in many situations which process, vertical motion or horizontal advection, plays more important role in changing the total ozone content of the air above a given locality.

In some observations, it has been found that when thunderstorms passed overhead, there was a rise of 2 mm in the ozone content which lasts from one to three or four hours. This fact sets up some stimuli to think about origin of ozone, in part atleast, due to thunderstorms.

It has further been found that the tropical air has a low, the polar air a medium and the arctic air the highest ozone content. So the air masses from these different regions, the development and displacement of which has a bearing on the weather conditions, may be classified on the basis of their ozone content.

In temperate latitudes the difference in the amount of ozone from its monthly mean has been shown to be closely correlated negatively with the pressure at 9 to 16 km level and the mean temperature of the troposphere. A careful analysis of available data of ozone values and the meteorological data has shown that ozone has a surprisingly high correlation with the potential temperature and the density in the stratosphere.

At pressent, it seems that the day-to-day and season to season changes in the ozone content of atmosphere are correlated less with the solar influence than with day-to-day and season-to-season changes in atmospheric circulations which have an intimate bearing on weather.

One can thus see that the vertical ozone distribution together with informatin concerning water vapour could be exploited directly in connection with forecasting. Perhaps it is a desire for more simple and less expensive apparatus which is discouraging meteorologists from attempting large-scale experiments ? Stratosphere flights and V-2 rockets are rare opportunities. The Umkehr-effect method could be refined considera-

bly if it were supplimented by ozone determinations in the lower 10 km by flight measurements.

To observe how ozone pulsates through the atmosphere like blood circulating in an organism, is quite fascinating. Ozone is created by radiation in high altitude layers. Primarily at the shadow boundary of the polar night, and at the altitude of the warm layer, it produces the temperature contrasts and resulting polar vortices which enable it to sink as a secondary layer down to the theatre of meteorological activity. And finally diffusing to the vicinity of ground level, the ozone re-enters the oxygen metabolism. Much work remains to be done before this sketchy picture is completed and verified by observations.

This task requires ever-increasing international cooperation, which has indeed always been exemplary in the ozone field. Typical single cases could then be treated in an united effort which would help us in a decisive manner to push forward to the last meteorological consequences.

ACKNOWLEDGMENTS

I am thankful to Dr. H. S. Rathor. Ph.D. (Chicago) under whom the writer is doing research work on "Atmospheric Ozone" for his encouragement and some critical discussions on the topic. He took great pains in going through this work.

PHYSICAL NATURE OF LIGHT

Dr. R. S. SHRAMA
Department of Physics

Science began by being a simple record of observations, and it has long retained this characteristic of its early years, continuing to be closely bound up with what is evident to our senses. It has, however, tended to break away more and more completely from this limitation; in proportion as it widens its field and probes matter more deeply, it becomes more abstract and attains a greater generality, to such an extent that it is only possible to follow it by dint of lengthy and laborious effort. Even then its aim is to reduce the complicated to the simple.

The first branch of Physics to develop during the early period was mechanics, which dealt with the movement of bodies, the other great division of Physics, viz. acoustics, optics and the theory of heat, developed more slowly, while slower still in growth were the new branches of electricity and magnetism in which as Langevin points out—practically nothing is directly accessible to our senses except by intervention of some mechanical process.

One of the fundamental characteristics of the history of science in recent years has been, strangely enough, to show that every explanation founded on the classical mechanics is quite untenable through the whole range of electricity, magnetism and optics, which latter has been proved by Maxwell and Hertz to be a branch of electromagnetism.

Light may be provisionally defined as the physical agency by means of which the eye receives the sensation of light. In this *article* it is proposed to discuss the nature of this physical agency, and if possible, to give some answer to the question, what is light ? It will be seen that our definition of light is too restricted to include all the work of this subject. To give the

answer to the question we have raised, it is necessary first of all to consider facts. In one sense, therefore, it may seem absurd to attempt any discussion of the nature of light until we have completed our study of its properties. On the other hand, there are certain outstanding simple facts so important that in the light of them, we may formulate tentative theories to be subsequently tested as additional information is acquired. Thus we are called upon to consider the following facts with most of which we have probably long been familiar.

Matter in not necessary for the propagation of light. Its passage is unobstructed in the vast interstellar spaces, while the light passes readily through certain kind of matter which we call transparent, with different velocities in different media. Contrast this fact with the case of sound which is not propagated in vacuum.

Light is regulalry reflected at a smooth surface such as a mirror, subject to the simple law that the angle of reflection is equal to the angle of incidence. This fact was known to the humanity few centuries before the Christian era.

Light is refracted at a surface separating two transparent media of unequal optical character, such as air and water. In the case of a plane surface, the sine of angle of incidence bears a constant ratio to the sine of angle of refraction (known as Snell's law). While the fact of refraction was known and observations were made as far back as the time of Ptolemy (Greece 2nd Century A. D.), the sine law was not discovered until early in the seventeenth century, probably independently by Snell (Holland, 1591-1650) and by the famous philosopher Descartes (France 1596-1650). But about 1000 A. D. an Arabian astronomer Albazen had already formulated the laws of reflection and refraction (not in sine but in perpendicular distances). It is said that he was also in possession of a big lens.

Light may be *simultaneously reflected* and refracted. For all practical purposes, light travels in straight lines the fact of rectilinear propagation. This, too, was known to the Greek Philosophers. The sharpness of the shadows jo

obstacles cast by a small source of light is an approximate truth. Experience shows that a very small body, when placed at some distance in front of the eye, will entirely hide a star or moon from view. It may be, however, remarked here that under special circumstance which will be considered later, it may be shown that the light does not always travel in straight lines, a fact to which attention was first drawn by Grimaldi (Italy, 1618-1663).

Light travels in free space at a very definite velocity. The velocity of light in a medium such as water is less than the velocity in air. This fact was experimentally shown by Foucault (France, 1819-1868) about 1862. And in 1883, Michelson (United States, 1852-1931) showed that the ratio of the velocities for these media was 1.33 (refractive index of water) which speaks about the optical behaviour of the medium.

Energy is carried by a beam of light. The reader, who scarcely needs to be reminded of this fact, will at once recall the rise in temperature, which results from the absorption of the Suns' rays as well as other manifestations of energy due to the same cause.

The above facts can be supplemented by many others. Considering these statements it readily becomes evident that there can be only two ways of transmitting energy from one place to another. That is, in general, energy can be propagated either by moving matter or by a wave disturbance being propagated through a medium which does not move as a whole. And therefore for light two general theories have been formulated. According to the one, the emisson or corpuscular theory, light consists of a flight of invisible rapidly moving particles whose size varies with the colour, projected from the luminous source. According to the second, the wave-theory, a disturbance travels from the source through a surrounding medium, difference in colour corresponding to differences in wave-length. One fact emerges from the above theories, i. e. on the wave-theory at all points on a surface through which

the beam of light is passing, energy is continuously and uniformly distributed, whereas on the other, the energy distributed is discontinuous being concentrated at points. The doubt regarding the meaning of a light ray may be lurking in the minds of the readers. The concept of light rays is merely introduced for convenience. It is altogether impossible to isolate a single ray and prove its existence. For, the more one tries to attain this by narrowing the beam, the less does light proceeds in straight lines, and the more does the concept of light rays lose its physical significance.

When the foundation of modern science was being laid during the seventeenth and eighteenth centuries, each of these theories received strong support. Wave-theory was upheld by such eminent scientists as Hooke (England), Huygens (Holland), Descartes (France) and Euler (Switzerland), while corpuscular theory was defended by such intellectual giants as Newton (England) and Laplace (France).

Now the question arises, which is the better theory? According to the corpuscular theory, the laws of rectilinear propagation, reflection and refraction are quite sufficient to work out the theory of image formation by mirrors, lenses and optical instruments. But the explanation of refraction involves a serious objection, that a ray of light travels at a less rate in air than in a medium of higher density which means that the velocity of light in a denser medium is more. This is contrary to the observed facts. Foucault and Michelson experimentally proved that the speed of light in a denser medium is less. It, thus, put some difficulty in accepting this theory. Scattering (reflection at the surface of very small particles) could not be explained which is nothing but an irregular reflection. Phenomena of interference, diffraction and polarisation could not be explained in accordance with this theory. It could be done only with the help of the wave-theory. Not only this but the phenomena of reflection and refraction could be better understood also. Thus the wave-theory got the impetus and its acceptance became almost universal.

The belief in the corpuscular theory began to decrease and people wished to forget it. By now the wave-theory took complete possession of the field. Throughout the last half of nineteenth century tremendous advances were made in the interpretation of the phenomenon of Light. The form of the theory was not always the same. The conception of vibrations in an elastic solid ether gave way to Maxwell's electromagnetic theory. But it was always a wave-theory. The existence of a wave depends that some physical quantity varies along the direction of propagation of the energy transferred. This quantity, which formerly was the density of the material ether, now is the electric and magnetic fields in free space. This is called as the electromagnetic ether. Indeed, so perfect was the agreement between fact and theory that in 1889 we find Hertz (Germany 1857-1894) making the statement "The wave-theory of light is from the point of view of human beings, a certainty."

Recently again the idea of corpuscular theory began to attract the attention of scientists after the discovery of the phenomenon of photoelectricity (1900) which otherwise can not be explained with the help of the wave-theory. This phenomenon postulates the discontinuous emission of light, in isolated bundles or quanta or light photons. It will not be wrong to remark here that the seeds of quantum theory, the pivot of Modern Physics, were already sown. The famous physicist, Max Planck of Berlin (1900) when he published his work on black body radiation, certainly had no idea of the vast consequences which would follow. The quantum postulates of Bohr (1913, Danish Physicist) were in perfect accord with Plank's theory.

The whole thing now boils down to that, no doubt, we find that the wave-thoery of light furnishes an adequate description of a wide range of observations, but at the same time, it is unsuitable to describe other sets of observations which are discussed in terms of light particles (photons). Any attempt to make a complete theory of light in terms of waves or

particles leads us simply to confusion. The modern position, then, is that light has a dual nature. Latest observations have amply proved that both the theories exist as complementary to one another and are no more under a dualism. We should realise that light must be looked upon as having both a wave nature and corpuscular nature, in order that we may have a satisfactory model stimulating the action found in the various experiments on Light. A consideration of these problems lead de Broglie (1923) to the conviction that in the theory of matter as in the Theory of Radiation, it was essential to consider corpuscules and waves simultaneously if it were desired to reach a single theory. These ideas gave birth to a new mechanics—one in which the motion of a corpuscule is inferred from the motion in space of a wave.

LEGENDARY CREATURES

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Whenever any body attempts to enter the realm of biology, the first thing that he or she encounters is a formidable barricade of perplexing scientific terms and phrases that twist the tongue in every conceivable direction. Of all scientific terms, those used in biology seem to be specially perplexing, as they are almost always Latinized and often have their origins embedded in the Greek and Roman legends, stories of which are absolutely unfamiliar to most of us. On the other hand it is totally impossible to proceed even a single step in biology without the use of appropriate scientific names and terms, a reason why biology is said to be a descriptive science as compared to the exact sciences like physics or mathematics. As a result, this unavoidable barricade often proves simply insurmountable to many, specially newcomers, who give up the study of this fascinating subject in disgust and under the impression that Biology (or Zoology) is nothing but merely a needless assemblage of difficult scientific terms. Yet few could imagine the care and caution taken for the selection of the terms and still few know the highly interesting legends and fables that surround the peculiar terms and phrases, particularly the generic and specific names used in Zoology.

The scientific naming of zoological specimens involves several international rules of nomenclature and these rules are, for the most part, of a rather technical nature. Leaving aside all the legal or technical aspects of nomenclature, it would be worth while to hear some of the interesting legends that surround the scientific names of some of the most familiar zoological specimens known to us.

To begin with, perhaps it would be most appropriate to hear the story of humble *Amoeba proteus* (fig. 1.), so familiar to every student of biology.

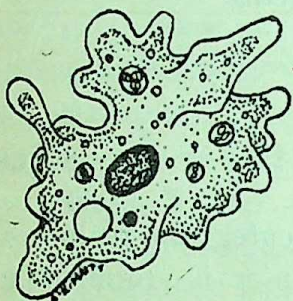



FIG. 1

According to the Greek legends Neptune was the ruler of all the waters of the earth, somewhat like Varuna of Hindu mythology. He lived in his palace made up of seaweeds, corals and shells below the ocean waves and had a faithful shepherd *Proteus* by name who used to herd all his cattle in his watery kingdom below the seas. Neptune became so pleased with the faithful services of *Proteus* that as a boon he gave *Proteus* the power to change himself into any form or shape and at any moment he wished. Today the little protozoa *Amoeba proteus* (fig. 1) inhabits all the waters of the earth and changes its form and shape every moment, reminding us of the services that dutiful *Proteus* rendered to Neptune in some bygone days.

On an island in the centre of the ocean there lived three terrible sisters known as the *Gorgons*. Actually they were half women and half dragons, for they had beautiful faces, but their bodies were like those of ugly monsters. Their hands were made of brass; but most horrible of all, instead of hair on their heads, they had hundreds and hundreds of poisonous snakes, wriggling with open mouths and hissing tongues. But worse even than the fatal bite of the snakes, was the power of their fierce eyes, for anyone who looked in the face of a *Gorgon*, would immediately be turned to stone; of the three *Gorgons*, the most terrible was *Medusa*.

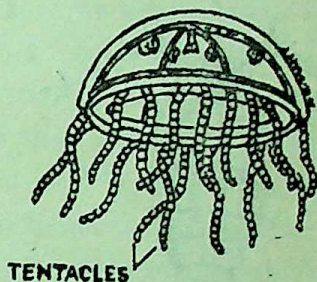
There was a brave lad called Perseus, who took great delight in all sorts of dangerous adventures. So the king of the land where Perseus lived sent this brave youth to cut off *Medusa's* head with the snakes and all. Perseus, after a lot of strange adventures at last succeeded in cutting off *Medusa's* head and in bringing it back to the king. But the king, on

looking at it was himself turned into stone. So Perseus presented this dangerous gift to the Goddess Minerva.

Perhaps the *Gorgons* are no more, but thank heavens, today when we observe *Medusa's* head in the form of a little *Medusoid Coelenterate* animal (fig. 2) floating in the sea with all its snaky tentacles, we are no more turned to stone.

Once upon a time there lived on earth a strange race of very large and strong giants called *Cyclops*, who lived in mountain caves, guarding their flocks of sheep and herds of cattle. Instead of having two eyes as you and I have, these creatures had but a single large one, which gleamed from the middle of their foreheads with terrific angry glares. Indeed, it was said that when the *Cyclops* roamed about in their mountain caves, fire shot forth from those eyes, and then they looked like volcanoes, vomiting flames through the great holes in their summits. Now one of these *Cyclops* was *Polyphemus* by name, a very ugly-looking creature, who used to live in a cave

FIG. 2

just above the sea. Everyday he used to sit on the top of a mountain, watching his grazing flock and making a good deal of noise by playing upon his hundred-reeded pipe. As he sat there every day he watched the sea nymphs sporting in the water. By and by he fell in very deep love with the fairest of all the sea nymphs, named *Galatea*. He forgot to look after his sheep and his huge staff, which was an entire pine tree stripped of its boughs, lay useless at his side. Very anxious to look pleasing to fair *Galatea*, he combed out his tangled locks of hair with a rake, cleared his shaggy beard with a scythe and then took his pipe of reeds and sitting down upon a rock overhanging the water, sang a very long and tedious song of love unto *Galatea*. But at his voice the mountains shook and the waves trembled and all the sea

nymphs including *Galatea*, fled in fear and hid themselves below the waves. At last seeing that all his efforts have borne no fruit and that *Galatea* was still unmoved by his love-offerings, he became furiously enraged and began to chase her in his anger, trying to kill her. But fair *Galatea* fled and hid herself below the dark ocean waves, so that *Polyphemus* was never able to find her. Today a little damsel working in the laboratory may safely pick up a stained one-eyed *Cyclops* (fig. 3) or a *Polyphemus* (fig. 4) and mount it in the centre of a clean glass slide for now they are no more than two little aquatic crustaceans swimming about merrily in the water.

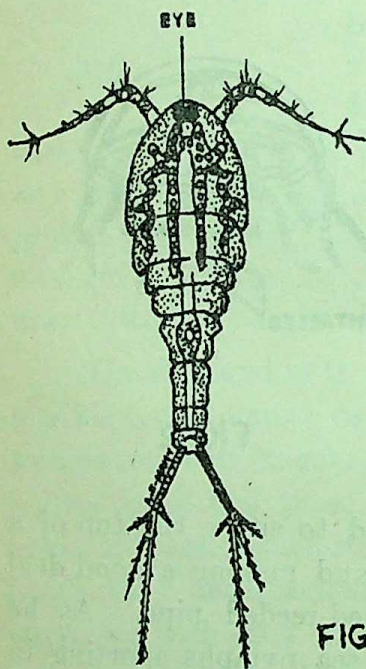



FIG. 3.

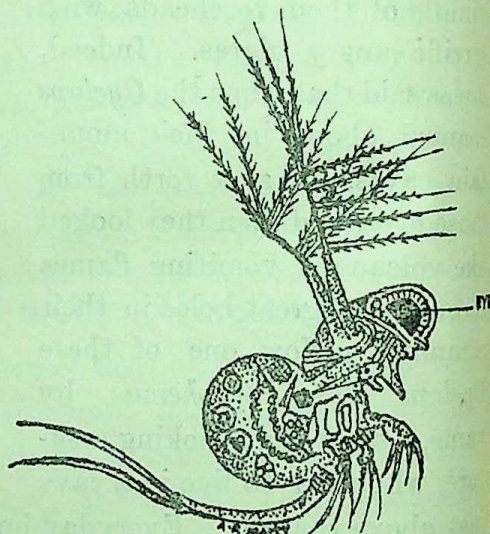



FIG 4

In the days of yore in an ancient city in Greece there lived a young girl named *Arachne*. She attained a great skill in spinning and embroidery and fashioned many exquisitely beautiful things with wool. She was famous throughout Greece and praises were showered upon her from all sides for her wonderful embroidery. Now, the continuous showering of praise slowly began to make her feel proud of herself. At last she became so boastful that one day she declared in public

that though she was only a humble girl, yet she was far greater in her skill than the Goddess Minerva ! When Minerva came to know of the girl's boastful claims, she decided to visit *Arachne* and to teach her a lesson. She arrived at the place where *Arachne* sat spinning and at first gave the proud girl a chance to withdraw her statements. But foolish *Arachne* was too proud to repent and straightaway challenged Minerva to enter into a trial of skill. So both of them took their seats in front of two empty looms and began to work in silence and after sometime there emerged through the skill of their deft fingers two beautiful pieces of embroidery.

But Minerva was so enraged at the girl's boldness that she seized *Arachne's* beautiful web and tore it into shreds. Then she picked up her shuttle and struck *Arachne* with it thrice upon her head. *Arachne*, who was too proud to submit to such humiliations, quickly seized a rope that lay nearby and was going to hang herself. But Minerva held her back and said— "Nay, you shall live, wicked girl; but henceforth you shall hang from a thread, and all your race shall bear the same punishment for ever." So saying Minerva vanished and in an instant *Arachne* was changed into an ugly spider, who spun and spun for ever.

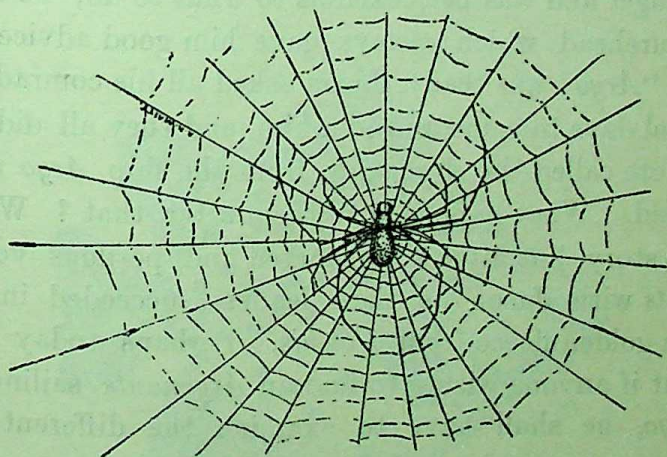



Fig. 5

Whenever we find a dusty old corner in an attic or when we look carefully along a garden wall, perhaps we shall see, if not *Arachne* herself, at least one of her race (fig. 5) spinning

and spinning away at a web, as a punishment for that foolish girl's vanity.

Long, long ago there lived in a certain country in Greece a very good king called Aeson, who had a young son named Jason. Now, king Aeson had a wicked brother who came up and drove him out of his kingdom and proclaimed himself the king. By and by Jason grew up into a brave, handsome youth. But his wicked uncle, who was now the king, was eager to get rid of him (for obvious reasons), and so one day induced him to go and bring back from the far away land of *Colchis* the lock of golden fleece that hung from a tree in a wood and guarded night and day by a fierce dragon. The wicked king was definite that Jason would never come back alive from his quest of the golden fleece. But Jason was a very bold fellow indeed, and was not at all concerned at the dangers which stood in his way. Instead, he built a good, strong ship, which he named the '*Argo*', for *Argo* means "the swift". At its prow he placed a figure-head carved out of an oak tree. This figure-head was a very wonderful piece of wood, for it could speak. Many a time during the long voyage whenever Jason was in great danger and was perplexed as to what to do, he consulted that figurehead which always gave him good advice. When the ship "*Argo*" was ready, Jason asked all his comrades of the old school days to come and join him, and they all did. These heroes were called the *Argonauts*, from the ship *Argo* in which they sailed. What happened to them after that ? Well, that is a long story, but after a protracted and perilous voyage the *Argonauts* with Jason as their leader' succeeded in bringing back the golden fleece from *Colchis*. Perhaps today Jason is dead, but if anyone wishes to find an *Argonauts* sailing in the boat *Argo*, he shall have to examine the different types of Octopuses very closely, and there he shall find a queer little Octopus called *Argonauta argo* (fig. 6), sailing in the sea in its strange boat-shaped shell, at the prow of which we can still discern a figurehead, which reminds us of the strange figurehead that Jason placed at the prow of the *Argo*.

Juno, as we all know, was the very ill-tempered wife of Jupiter, who was the king of the Gods. One of her servants was *Argus*, who was a very very good watchman; for he had a hundred eyes and no matter how tired he was, he never closed more than half of them at a time. So Juno set *Argus* to keep watch upon Io, a beautiful maiden turned into a cow by Juno, for she (Juno) suspected that Io was in love with her husband. But Jupiter wanted to rescue Io and so he sent his son Mercury to kill *Argus* and then set Io free. Mercury, after much trouble, at last managed to chop off *Argus's* head. If anyone is interested in seeing the hundred-eyed head of *Argus* he can easily find it in a little marine fish named *Scatophagus argus* (fig. 7). For this Pomfret-like Teleost has got all over its body numerous black spots, reminding us of the hundred watchful eyes of *Argus*.

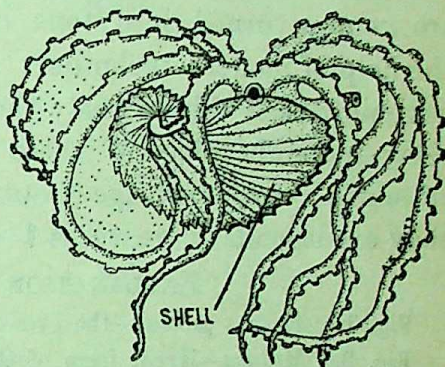



FIG. 6.

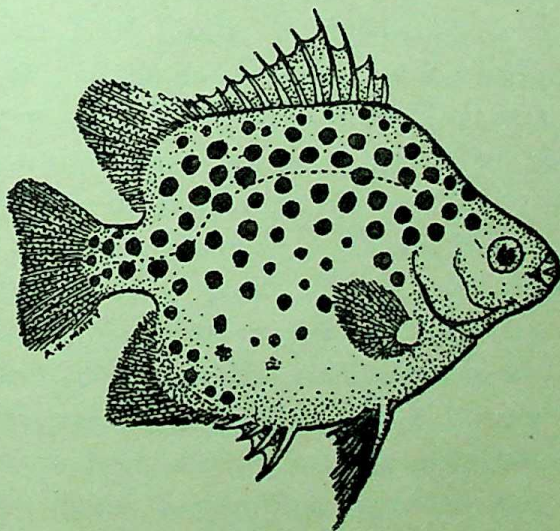



FIG. 7

The stories of legendary creatures that still roam about could thus be multiplied many times. Due to limitations of space, I have been compelled to leave out the stories of *Atlas* or of *Syrinx* from this article; nor are the myths about the *tendon of Achilles* or of the *Mitral valve* less interesting. By God's grace, today we are no more the captives of *Argus* nor are we now turned into stone on looking at a *Medusa*. With the help of modern techniques and scientific instruments, we have now been able to study thoroughly the morphology, anatomy and embryology of these zoological specimens; but in spite of all our knowledge about them, can we ever deny that they are legendary creatures ?

Explanation of Figures :

Fig. 1. *Amoeba proteus*—the ever-changing animalcule.
Fig. 2. *Medusa*—larval form of *Obelia*, a marine Coelenterate.
Fig. 3. *Cyclops*—the one eyed fresh water Crustacea.
Fig. 4. *Polyphemus*—an aquatic Crustacea.
Fig. 5. *Arachnid*—(a spider) on web.
Fig. 6. *Argonauta argo*, (Female)—an Octopus with its boat-shaped shell.
Fig. 7. *Scatophagus argus*—a marine fish with numerous dark spots on its body.

(Illustrations by the author)

LIBRARY SERVICES IN INDIA AND AMERICA

SHRI RAM GUPTA

(*B. Lib. Sc. student*)

0 Introduction

In the month of October 1963, a two days seminar on the 'Library Service in India and America' was held in the Central Library Buildings, sponsored jointly by the Banaras Hindu University and the United States Information Services. This seminar was first of its nature to be held in India. Since it carries intense value in comparing the library services in our country with any other country, especially a country like America which has made many strides in the field of study and practice of library science as a subject, the thoughtful conclusions and weighty suggestions made in the process of the exchange of ideas and thoughts are reproduced below.

1 Service in India

The first day of the seminar was devoted to the discussions on the topic—'Library Services in India'. The chief speakers were Sarvashri P N Kaula, B N Ghatak, L S Shukla and M Rajbee. Shri Kaula had brought out a working paper too. After giving a cordial welcome to Mr Donovan and all the participants in the seminar, he threw light on the various aspects of library services in India. In ancient India, though there were the big university libraries of Taxila, Nalanda, etc., there was hardly any trace of public library services as concieved today. In India, library services saw the first rays of the new light only after 1902 with the establishment of the Imperial Library at Calcutta. But, actual work on library services can be said to have been started only from 1910 onwards. The efforts of Lord Curzon, Sayaji Rao Gaekwad and the Andhra State deserve special mention during the infancy period of library services in India.

11 *A New Turn*

From 1930's, commences the *Age of Ranganathan.* This great genius took up the reins of library movement in his hands and drove it so masterly that within a few decades, India could secure a front seat amongst the top ranking countries in the field. Dr Ranganathan, the most dynamic personality on the subject today, went deep into almost all the aspects of library service. He fought for enacting library legislation. He invented a new, effective and scientific scheme of classfication. He gave birth to a code for a Classified Catalogue. He advocated in strong words the significance of Reference Service and of librarianship as an honourable profession. He initiated imparting library education in different parts of the country. In that way, the achievements made in Dr Ranganathan's Era are much more numerons and beyond evaluation.

12 *Further Development*

Then Shri Kaula highlighted the details of development in respect of formation of library associations; realisation of the bare need of library legislation; due recognition to the library profession and imparting of library education; production of libary literature; and so many other related problems of library services in India. He expressed his happiness while pointing out the latest library trends, such as, substantial regard for Five Laws of library science; increasing use of the Colon Classification; more and more use of the Classified Catalogue Code; and mass recognition of the significance of open access; long hours of work in libraries; provision of reference service and initiation of documentation work, etc., by the working librarians.

13 *University Libraries*

Shri Ghatak elucidated the condition of university libraries in India. The university libraries play a very important role in the higher studies and research work. A library in a university has very often rightly been called an effective laboratory. But in India very little attention was paid during

the past to improve their condition. For a very long time, these libraries were being considered only as depositories. But, recently the change in outlook of their organisers, users, and librarians has come to show a sign of good health. In Banaras Hindu University itself, the University Library has been undergoing a sort of overhauling since the past couple of years. This could be possible because of the new set up of its personnel, application of up-to-date techniques and its new head being a dashing personality with inexhaustible buoyancy of youth and most likeable administrative qualities. While concluding his paper, Shri Ghatak analysed three types of departmental librari-es in universites and advocated for having these libraries as service units of the Central Library.

14 *Library Education*

Shri Shukla emphasized the importance of library educat-ion in India. According to him, education meant unfoldment of the whole personality, i e expositions of the three psycho-genetic powers of the learner. The teachers should note that they could cultivate in their students the basic urge for knowing and understanding things. That may help in making the horizontal as well as vertical developments which may in its turn give the essential and full meaning to education.

15 *Library Associations*

Shri M Rajbee discussed the evolution of library associa-tions in India. It was in 1910 that Maharaja Gaekwad pionee-red the library movement. As a result a few other, States also could have their library associations. Dr S R Ranganathan's efforts speeded up this essential task. Today, most of the States have their own library associations. But, the Indian Library Association needed a rejuvenation. Its important functions should be recognised a new and new targets set forth.

2 *Discussion*

A lively discussion follwed after the reading of these papers. Clarifications on the term unfoldment of personality

through library education; the duration of various courses in library science, etc. were sought and met with. Suggestions for changing the techniques of library education; enactment and implementation of library legislation; provision of children libraries; to make library services available publicly and in a more effective way, etc. were put forward and accepted. All agreed that India has yet to improve the conditions of her library system; the method and the pattern of its library education; the present poor use of books in the country; and such other aspects, either through the public drive or through the imposition of legislation.

2 1 *Films*

On the second day of the seminar, there had been a film show programme. The films shown covered the subject 'local, regional and federal library servicess in the United States.' Before each film, Mr Donovan gave an introductory talk which made the show more clearly understandable to all the participants.

3 *Services in America*

After Shri Kaula's brief and appreciative introduction to the general conditions of library services in America, Mr Donovan, the chief speaker from the American side, explained the details of his working paper. He told about the role of federal libraries; the county and regional libraries, the public libraries; the school, college and university libraries; and the special libraries in USA There are three national libraries in America, viz., Library of Congress, National Library of Medicine, and Library of the Department of Agriculture. He made it clear that because of their large size and mainly because of the characteristic of Americans of being lovers of a federal system, these national libraries have not been centralised. He mentioned that in America, public libraries provide services free of charge. The overall coverage by these libraries is quite large. There, the government is aware of the increase in population and would be ready to cope with the expected

changes. As a surprise to all, he told that even in such a rich country, there existed the problem of acquiring financial sources for libraries.

3 1 *Library Associations*

The other two aspects, which Mr Donovan tried to explain, were the library associations and the education for librarianship in the States. There the general tendency is to organise and to run libraries by voluntary groups from amongst the public themselves. Where it fails, the Government comes forward for help through legislation, etc. American Library Association (1876), National Association of State Libraries (1889), Medical Library Association (1898), American Association of Law Libraries (1908), Special Libraries Association (1909), Catholic Libraries Association (1921) are some of the major library associations of the States. The library associations in America work with a clear purpose of improving library services and for the growth and well-being of library profession. Out of these associations, American Library Association works as a national organisation for library planning and controlling the work of libraries at a national level. In America more emphasis is put on the training of individuals. There the library education is imparted at different levels, viz., Graduation, Master's Degree and Doctorate. The States do attract foreign students for training in library profession by offering handsome scholarships to the deserving ones.

3 2 *Education for Libraries*

Shri HD Sharma, the second speaker for America, brought into light a much concerned aspect—the education of librarianship in America. His talk was based on his personal experiences on that land. He mentioned that in America, he found lack of teachers' personal attention to their students, because of the large number of students in most of the courses. At least that was the case in Michigan University. The technical side of the subject did receive very little attention in their educational system. They stressed more on the readers services, so as to

make library services more effective. That is why libraries in America are giving much better service than their counterparts in India. That spirit of service we also should copy from them.

3 3 Public Library System

The third speaker on the American library services was Shri J C Binwal. He exposed the overall picture of public library system of USA especially, its structure; legislation for it; formation of units of library services; the general attitude of library authorities; provision of finances; role of library associations, etc. He raised the following issues:

1. Whether a network of libraries can be possible only within an organised system;
2. Whether the legislation pattern of USA can suit to Indian conditions;
3. Whether the state aid should be for equalisation purposes or for stimulation purposes;
4. Is it desirable for public libraries to take up the extension activities when other agencies exist for the same purposes; and
5. Whether library services can be possible only in a viable unit.

4 Discussion

As the participants were more curious to find out some suitable answers to their querries, the seminar prolonged till late in the night. Mr Donovan gave a surprising information that in America no janitors were engaged for keeping a watch at the library doors. Shri R N Kaula, one of the participants, put forward a suggestion that the teachers of library science should be put to practical work in libraries, so as to keep up with the day-to-day difficulties; need and use of latest techniques; genuine problems of the readers, etc.

5 Similarities

In the end, Shri P N Kaula summed up the whole discussion laying out certain similarities and dissimilarities in the

conditions of library services in both the countries. Both have alikeness in the stages of evolution of public libraries, i.e. public libraries evolved from the subscription libraries. Both share the credit of bringing out individually the schemes of classifications which secured world-wide recognition. As is in America, in India too, special libraries have formed their separate association. The pattern of library management and the types of libraries in both the countries is almost the same. America and India both are great to the extent to produce individually the two great genius in the field, namely, Dr. Melvil Dewey and Dr S R Ranganathan.

6 *Dissimilarities*

Besides the above similarities, both countries have much dissimilarities also. While USA has a strong and active library association to work at the national level for control of this working of libraries, India has yet to make up the deficiency. In India, the minimum grants given to libraries are very scanty, varying from Rs 18/- to Rs 50/-, while in the States, it is fixed at 500/-, a handsome amount. American librarians believe in fragmentation of collections and importance of non-book material. But in India, the trend is different. American libraries have the privilege of legislation throughout the country, but in India it could be enforced so far only in two states. American land could give birth to a Carnegie, whom India needs yet to day. But, India is the only country to produce a philanthropist amongst the intellects of library science. India's Ranganathan donated Rs 1,00,000, his life long savings, for the furtherance of the cause of library services in the country.

7 *Conclusion*

From the above comparison it can be visualised that both the countries deserve honour for their unique contributions. Besides, both can learn many things from each other for making their library services more improved, up-to-date and effective. Such sort of spirit of cooperation and mutual help may prove helpful not only to the Americans or Indians but to the huma-

nity as a whole, desirous of getting more and more from the ever inexhaustible treasure of knowledge. With such illuminative and thought provoking conclusions, the seminar came to a close, enhancing the better understanding and friendly relations between the representatives of the two countries.

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DOCUMENTATION AND LITERATURE-SEARCH

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[Describes the genesis of documentation and the shift in the study of literature from macro-thought to micro-thought. Explains the documentation organisations in other countries and the contributions of Dr Ranganathan in this field. States the services of INSDOC and the initiative of librarians, in introducing documentation work. Explains the meaning of documentation and its need for pin-pointed reference today due to research activities in almost all the field of the universe of knowledge. Evaluates the growth of the universe of knowledge and the creation of the multifocal subjects. Describes the pattern of documentation work and gives an account of this work in the field of Labour economics. Refers to the documentation in other regions of the universe of knowledge in India. Explains the services of VINITI and compares them with those of INSDOC. Stresses the need for documentation of planning literature and the setting up of the National Documentation Centres in Indology and Social Sciences.]

1 *Genesis*

Documentation is a new subject which is developing in our country. It has been in existence in other countries for some years but it has thrived only in a few of them. So far as our country is concerned, this subject is of recent origin. Seventy one years ago, two Belgians—Paul Otlet and Henri la Fontaine—acted as if they believed that the universe of knowledge was a dynamic continuum; that it was ever progressing; that it was ever changing; that it was multi-dimensional and multi-directional. In other words, that the universe of knowledge was not static. So, naturally those who wanted to study should be kept informed with up-to-date information. The aids were a bibliography, a documentation list, or a catalogue of documents. There were many documents which could not be considered books. For instance, articles in periodicals, reviews in newspapers, editorials in periodicals, chapter in books, pamphlets, monographs, etc. Such materials were brought out in large quantities. The entire literature of this kind

was going to be a waste because libraries were ordinarily interested in storing and serving books as wholes. But the materials described above are very valuable because they give up-to-date information where as the information in a book should necessarily be a year or two behind time; for, the contents of a book go out-of-date by the time they are published. That is why the two Belgians planned to bring out an International Bibliography. They went on documenting non-book materials in a bibliography. They invented a scheme of classification in order to classify the materials minutely to serve the scientists and research workers pin-pointedly.

2 *Documentation Organizations*

Some countries in the West initiated Documentation in order to give pin-pointed reference to different categories of persons; that is, scientists, aducationists, industrialists, policy makers, administrators, and social scientists. To achieve this object permanently, the International Institute of Bibliography was established in 1895 in Belgium. It is now called the International Federation for Documentation. The American Documentation Institute was established in 1933. By that time, the British Institute was also created.

3 *Dr Ranganathan's Contribution*

In India the only person who first thought of introducing Documentation was not a scientist but a librarian, His name is Dr S R Ranganathan, now regarded as the Greatest Librarian that India has produced and the World's Greatest Librarian of to-day. He pleaded for introducing documentation service in order to serve the scientists, scientific laboratories and research workers not only in the field of sciences but also in the field of humanities. Dr Ranganathan was at first the Librarian of the Madras University. He served that university from 1924 to 1944. He compiled subject bibliographies to serve the departments of that university. For instance, if the Physics Department was interested in Quantum Physics, he prepared a list of relevant materials and served the department

with those materials. The department was pleased to find all the materials listed which saved their time and helped them in concentrating on their research work. Similarly, Dr Ranganathan met the demand of all the departments of his university.

4 *INSDOC and its Services*

After the Independence of our country, Dr Ranganathan was invited by several national and international organizations outside India to advise them on library matters. He, therefore, got an opportunity to plead with the UNESCO the case for establishing the National Documentation Centre in India. Within the country itself, he had prepared the Government for it. The result was the establishment of INSDOC in India in 1952. Dr S S Bhatnagar helped in creating a chain of scientific laboratories also. With the growth in research and the enormous literature being produced, an agency to index all the scientific literature had to be created. Otherwise it would go to waste without being applied or fed into future work. That was the line of argument of Dr Ranganathan. He created distinction between Documentation Work and Documentation Service. He also evolved techniques for Documentation Work. Since 1962, INSDOC has been developing its services. It has been documenting scientific papers from 600 periodicals and issuing *Insdoc list* since 1954.

5 *Initiative of Librarians*

Besides this, some librarians took upon themselves the work of documentation. They were attached to research institutions. Some libraries in the Government of India, on their own initiative, started documenting literature of their respective interest in order to feed the government departments, offices, and ministries. As a result of the development today, there are several agencies and institutions in India which are engaged in pin-pointed documentation work for the use of the government personnel, research workers, scientists, economists, and so on.

6 *Meaning of Documentation*

What is the meaning of the term Documentation ? What is the actual denotation of this term ? Here is the answer. The term came into existence in Frence. French people were the first to use this term. It was synonymous with 'Micro-Bibliography.' Documentation includes selection, collection and orderly presentation of recorded materials and records of such materials in any field of knowledge. In other words, it is an intensive bibliographical work with emphasis on micro documents which include articles, monographs, information records, pamphlets, etc. Why is Documentation necessary ? The answer is simple.

In the past, research was carried on by a person who was a born intellectual and with extraordinary mental capacity; who was dedicated to the work whether he was paid for it or not and whether he got any recognition or not. In the past, the research work was the work of a genius. He was under no pressure to do the work, but did it for the mere love of the work. It takes three or four generations for the society to throw forth a genius. But today the situation is quite different; and research is done in "series". There are research workers and research officers, who are interested to do research-in-series. They are paid for it. Formerly these persons were not paid for the work they did. They were doing the work for the love of it, in the interest of the country and of the institution where they were working. Persons who are doing research work today are not generally men of genius. Many are ordinary intellectuals. Since now-a-days research work is conducted at sevaral places and on varied subjects, it is necessary that the researchers are able to collaborate to know what the other team had done. Therefore, it would be a waste of funds and time if research workers duplicate or multiplicate their efforts. Human mind is dynamic, but some times it refuses to be dynamic and it cannot keep pace with the universe of knowledge. In order that one may be able to do research ahead of what has already been done, it is very necessary for one to

read all that has already been done in one's field. Therefore, it is necessary on the part of some agency to index what has been published in the form of some document.

In India, it has fallen to the share of library profession that they should index all the documents, classify them minutely, and bring them to the notice of research workers. If it is not done, then our research work will not be very useful and the country will not progress as it ought to. Since the documents are published in several languages, a translation service has to be created. The documents should also be made available through reproductory processes.

71 *Importance of Documentation*

The work of documentation has gained sufficient importance. It was selected as an important item of the National Productivity Seminar held in New Delhi in 1957. It was accepted essential for increasing productivity. The Indian Standards Institution set up a Documentation Sectional Committee with Dr Ranganathan as its chairman in 1947. This Committee has formulated several Standards for Documentation Work.

72 *Growth of Multifocal Subjects*

If we see the trend of the contents of the books forty years ago and compare it with the present trend, we will find an enormous difference. Today the demarcation of the subject is not clear. There is much overlapping. In other words, we deal with multi-phased and multi-focal subjects. One subject has several ideas common with other subjects. Naturally, an analytico-synthetic classification system has to be used so as to bring out the essentials of all the subjects; because if a subject is bi-focal, two persons would be interested in it; and in the case of a subject which is multi-focal, many people would be interested in studying it.

8 *Pattern of Documentation Work*

There are 27 patterns of doing Documentation Work. These have been analysed by me in one of the articles

published in the *Herald of library science*, January 1962. These patterns arise out of several factors and one of them is the Time factor. Time factor guides us in deciding whether the Documentation List should be current or retrospective, issued on monthly basis or on weekly basis. Then, there is the Arrangement factor which governs the arrangement of a documentation list which may be alphabetical, minutely classified or with broad subject headings. If we take into consideration the Material factor, we can decide whether the list should be comprehensive, selective and so on. Thus there are 27 patterns for doing this work. The librarian has to meet the problems in some one way. And for that purpose, he must have experience of documentation work, knowledge of the subjects documented and of the latest techniques to yield the result through documents asked for. If this is done, research workers will feel happy. They will be relieved from the problems of literature-search. Their time would be saved to do creative work in which they are engaged.

9 1 *Documentation of Labour Economics*

In the Government of India, it was the Ministry of Labour which started for the first time a systematic Documentation Work on Labour Economics and allied problems. The writer of this paper was appointed the Librarian in June 1951. He, on his own initiative, started Documentations Work in November of that year. He had the qualification for it as well. The periodicals, newspapers, gazettes and other micro-documents received in the Ministry were regularly indexed, minutely classified, properly catalogued, featured with all possible headings, and brought out in the form of a list and widely circulatad to all the officers of the Ministry, Trade Unions, Labour Organizations, Labour Officers, Labour Departments and others interested within the country and outside. INSDOC had not then come into existence. The periodical Documentation List was brought out as a monthly. It was of much help to every one. The usefulness of this work was very much realised by the Government at the time of the General Strike. There had

been a General Strike in Great Britain also, perhaps in 1927. Our Government was interested in knowing how to break the strike of essential services and what steps had been taken by the British Government in that connection. Trade unions were interested in knowing how to continue the strike. On the one hand, the Government of India was asking the Library of the Labour Ministry for the materials which may help them in breaking the strike, and on the other hand, the trade unions and labour leaders wanted such materials as could make the General Strike successful. It was only the Documentation Lists of the Ministry which came to the rescue of both.

92 Documentation in Other Fields

Following the example of the Ministry of Labour, several other Ministries and Government Departments started doing similar work. It was started by the Ministries of Law, Education, and Commerce and Industry. Institutions like the Indian Council of World Affairs, Indian Council of Agricultural Research, Indian Statistical Institute also introduced Documentation Work. The libraries of the Hindustan Anti-biotics at Pimpri, ATIRA at Ahmadabad, and some other institutions introduced Documentation Service. It should be started by other libraries too. In universities, Documentation Work should be initiated in specific fields. Perhaps the Banaras Hindu University is the best suited to introduce Documentation Work in Indology. This subject has not been covered by any other institution in the country. There is a separate College of Indology as well. It can be well understood that the information embodied in specfiic reading materials cannot be ignored. A flood of literature is being wasted because there is no Documentation Service. If the Documentation Service is started, research workers will be greatly helped.

921 Insdoc List

Insdoc is bringing out weekly lists. Insdoc is indexing all the scientific periodicals that they receive in the Insdoc and they are getting the contents pages of the foreign periodicals by air in advance. But the work is enormous and it is very difficult to index all the periodicals adequately.

9 3 Service of VINITI

In Russia, the State-wide Documentation Work was started in 1953 by establishing an institute called VINITI. This came into existence after Insdoc. But VINITI is able to render much more service than Insdoc because enormous resources have been at its disposal. The staff in VINITI has grown to 3,000 while in Insdoc it is only 100. It is indexing 20,000 periodicals against 600 of Insdoc and has got several editors for each subject. In Chemistry alone, there are 250 editors. This shows that Insdoc is very deficient in staff and service and has to be developed.

9 4. Expansion of Insdoc

Fortunately Dr Ranganathan's proposals for the expansion of Insdoc during the Third Five Year Plan as one-man committee set up by the Planning Commission, have been accepted. As a result of his recommendations, the National Central Science Library would come into existence besides the expansion of the services of Insdoc.

9 5 Translation and Abstracting Service

There is, however, a great hindrance to Documentation Service. This is the language barrier. Effective Abstracting Service is not possible unless there is a panel of translators to assist in translating the reading materials from one language into another. Then there is the need for subject specialists. Insdoc has not been able to employ many translators and specialists. The difficulties of translation from one language into another are well known. At the research level, documents are brought out in English, German, Russian, French, and other languages. In order that there should be an efficient Documentation Service, it is essential to have a panel of translators to abstract the materials appearing in various languages. In Russia, VINITI has got a panel of abstractors and translators numbering about 4,000 who are working part-time besides the full-time staff of 3,000.

96 *Documentation of Planning Literature*

In the field of Planning, which is a new concept, very little Documentation Work has been done. The Planning Commission was set up in 1950 and since that time, enormous literature has been produced on planning within our own country. But where to locate that literarure ? How to help the planners with the materials that they need ? In each Five Year Plan, there is reference to one subject or the other. I had therefore suggested to the Union Minister of Planning in 1958 that Documentation of Planning Literature should be taken up at the national level if we had to achieve the targets laid down in diffierent Plans. Some work was done by me as well. But the Office of the Planning Commission created some hinderance. It is evident that our research workers are vitally connected in knowing the literature regarding our Plans, their draft outlines, financial resources, targets, working, failure, success, criticism and so on. Who should do it ? It must be either the Planning Commission or the Ministry of Planning. If that is accomplished, Planning will be done more efficiently. Any other institution can do it but not at a national level. Since we are vitally connected with the success of the Plans, we can induce the Planning Commission to make literature-search possible on various facets and phases of Plans.

97 *Documentation Centre in Social Sciences*

It is my wish that all the scientific institutions and social institutions are served with pin-pointed Documentation Service. Our industries cannot flourish unless each worker is served with information service. Duplication of work in Documentation by similar institution should be avoided. Naturally there is need for a central documentation agency in the field of Social Sciences on the lines of Insdoc. This subject was discussed at a Seminar on Social Science Research and Libraries in New Delhi in January 1959. Till such an agency comes into being, let the institutions ask for Documentation Service involving efficient and expeditious literature-search from their own librarians and libraries.

PLACE OF ANNOTATION IN LIBRARY CATALOGUES

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"He shall be as a God to me who can rightly divide and define"
—*Plato.*

0 *Evolution*

A student of annotation need understand and share this feeling when characterizing a book in the form of a compact descriptive or critical note. According to H. E. Hanies annotation had been a feature of the "old literary guides" [1]to various fields of knowledge, embodied in the form of reading literature both general and specialized. Its adoption by librarians, as per the views of Indian genius Dr. S.R. Ranganathan[2] is due to the publicity factor which evolved during the time readers had no direct access to books. All the books under lock and key needed presentation of their distinctive features to their users. To meet this situation, librarians explained their thought contents in brief in a catalogue card representing the book. This in due course came to be known as annotation.

1 *Definition*

With the march of time, the term annotation came to be recognised in the publishing, literary and library world.

In the year 1906, Dr. E.A. Savage, had defined annotation as a "term applied to all processes of describing the leading features and ideas of books in a succint manner whether by analysis or criticism or both together".[3] Later, in 1932, W. C. B. Sayers, a renowned library scientist, enunciated annotation in popular words as follows :

"Annotation is a descriptive extension of the title page of a book in which the qualifications of the author, and the scope, purpose and place of the book are indicated".[4] Definitions approximating the above two are given by L.M. Harrod[5], Thomas Landau[6] and a number of dictionaries of English language.

In all, it appears that annotation is the compilation of notes on a books history, subject and intention.

2 *Purpose of Annotations in a Library*

Out of all the above delimitations Thomas Landau has restricted the concept under consideration to Catalogue calling it "a note appended to the entry of a book of a catalogue, reading list, bibliography etc. extending the formal description of the book detailing its subject, scope, purpose and special features". In his opinion, annotation should form the 6th and final section of a catalogue entry and like other entries viz. author, title, collaborator, imprint and bibliographical note, it should also have a few objects. So far five chief objectives have been estimated :—

(a) To attract the attention of the reader to the book which otherwise might remain unused;
(b) To supplement, explain and if necessary, correct the details on publishers "title page;
(c) To isolate special information which may be of value;
(d) To interpret the thought content of a book if the title is fanciful, multifocal and misleading; and
(e) To lay less stress on the correctness or minuteness of a class number given to a book.

Besides the said objectives, H. E. Haines thinks that annotation is a means by which the choice of books are often determined" and hence may be of considerable help in Book Selection work of the library.

3 *Types of Annotation*

There are several methods of giving an annotation. They vary in relation to its purpose to a library. Dr. Savage's enunciation has brought forward the following types of annotation :—

1 Purely evaluative;
2 Purely critical; and
3 Combination of the two.

The main aim of the said types of annotation has been to examine whether an author has successfully accomplished his aim in writing the book. In addition to it, even an annotator had to see whether an author had kept himself in touch with current literature. Some book lists still uphold this practice. With the extension of the purpose as recorded by Landau and Haines two other types of annotation have come into existence. These are as under :—

4 Purely elucidatory or descriptive annotation ; and

5 Combination of the several types.

Thus the factual description of the contents of a book and the information not otherwise revealed by the formal sections of an entry is now an essential characterstic of annotation when adopted in a library catalogue. Haines has summarised the above mentioned types of annotations under two broad heads :—

I Readers Note :

Those annotations which intend to impart information to the reader and at the same time awaken a desire to read the book. Category 4 comes under this head.

II Librarian's Note

Those annotations which may help,a librarian in selecting books, especially categories 1, 2, 3 and 5 cover this aspect.

4 Controversial Problem

The art of writing an annotation including its when and how, is a technical job. A number of specialists have covered this aspect in their own style. The burning problem to-day is whether there is a necessity for extensive annotation in an entry of a library catalogue. Henery sharp[7] has clearly stated, "It is dobtful if 2% of the users of a public library catalogue are least interested in or attracted by annotations appended to the catalogue entries". R. L. Collision[8] on the other hand feels that the addition of a brief annotation to a list makes the list invaluable. Krystyna Remerowa[9], a Polish writer has also recognized Collision's views. In America the opinion is divided

but in India, Dr. Ranganathan, pleading for the adoption of a classified catalogue, expresses its need only when the title of a publication does not give an adequate or correct exposition of a book. Accordingly there will be a limited need of annotations in a classified catalogue since the class number and the alphabetical subject entries usually gives an exposition of a book co-extensively.

5 *Conclusion*

Despite the doubts raised against the utility of annotations in a library catalogue, it can be said in its favour that the extra-service to readers in special circumstances is worth it. No doubt Open Access of collections to readers has led to its slow disappearance from library catalogue, yet in special types of libraries and in special collections it will help to isolate information which may be of value. Such libraries normally house non-book reading materials. It is also a well known fact that there is hardly any scheme of classifiication which is able to translate each and every type of material into the ordinal numbers constituting a class number. The Colon Classification which is a purely analytico-synthetic classification may be able te eliminate the use of annotations in specific types of reading materials. But its need will remain. Though, of course, it may not have the same liberty as it had in the days of Printed Catalogues.

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पुस्तकालय आन्दोलन : एक अध्ययन

उग्रमोहन ठाकुर

छात्र, पुस्तकालय विज्ञान

[प्राचीन मान्यतायें बदल गईं हैं। पुस्तकालय केवल पुस्तकों के संचय-गृह ही नहीं रहे वरन् संदर्भ-सेवा गृह बन गये हैं। पुस्तकालयों में बैठकर स्वाध्याय किये बिना कक्षा की पढ़ाई अधूरी है। पाश्चात्य देशों की तरह अपने देश में भी अच्छे पुस्तकालयों तथा पुस्तकालयाध्यक्षों की आवश्यकता है। अच्छी शिक्षा के बिना मानव जीवन का चरमोत्कर्ष दुर्लभ है।]

१—पुस्तक-संचय से अधिक उनका उपयोग आवश्यक

कहा गया है कि भाग्य का दूसरा नाम कठिन परिश्रम है (Luck is the another name for hardwork) परन्तु अज्ञान के साथ किया हुआ कठिन परिश्रम कोरा ही सिद्ध होगा। अज्ञान के विनाश के लिये यह आवश्यक है कि ज्ञान की प्रतिष्ठा हो। लेकिन कैसे ? ज्ञान की किरणों के समान रूप से प्रसारित करने में पुस्तकालयों को अग्रदूत मांना गया है तो यह स्वयं सिद्ध है कि अज्ञान का विनाश पुस्तकालयों से बड़ी सफलता के साथ हो सकता है। लेकिन खेद का विषय है कि भारत में पुस्तकालयों का उचित मूल्यांकन अभी नहीं हो पाया है। यह सर्व सिद्ध है कि वर्त्तमान समय में पुस्तकालयों का कार्य केवल पुस्तकें इकट्ठा करना ही नहीं रह गया है बल्कि इनकी पहली पुकार "पुस्तकें उपयोग के लिये हैं" हो गई है।

२—हमारा देश

कहा गया है कि सरस्वती एवं लक्ष्मी में बड़ी इर्ष्या हैं, दोनों एक साथ नहीं रह सकती हैं, लेकिन आज की स्थिति कुछ और ही है आज अमेरिका वगैरह पाश्चात्य देशों की ओर गौर तो फरमाइये। वहाँ लक्ष्मी भी हैं और सरस्वती भी, और एक हमारा देश है जहाँ न लक्ष्मी हैं और न सरस्वती—आखिर क्यों ? इसलिये कि हम सभी प्रबुद्ध नहीं हो पाय हैं। शिक्षा अब भी अपूर्ण है। हम अशिक्षित थे तो इसलिये हमें जान-बूझकर कर अशिक्षित रखा गया। लेकिन अब तो हमारी नसें उभर आयी हैं, क्यों न हम अपनी स्फुरित शिराओं के गर्म खून से समाज के ठिठुरे कंकाल में गर्मी लाकर उसे स्वदेश की भावना से स्पंदनशील बना दें।

चरमराती हुई हड्डियों पर यदि हमें रक्तमज्जा एवं मांस का संचार करना है तो यह आवश्यक है कि हममें अज्ञान का अभाव हो। हमारे मानसिक क्षितिज में समाज निष्ठा और स्वदेश की भावना आवे। इनकी प्राप्ति के लिये हमें एक बार मिलकर अपने विचारों को बदलना होगा, समाज को झकझोरना होगा। इसलिये नहीं कि हमें समाज द्रोह करना है, इसलिये नहीं कि हमें राजद्रोह करना है, इसलिये नहीं कि हमें देशद्रोह करना है बल्कि

इसलिये कि आज हम भूखे हैं—पेट से, तन से, मन से और धन से। पेट भरा भी तो मन की भूख कहाँ मिटी और इसी भूख को मिटाने के लिये हमें जूझना पड़ेगा।

३—उच्च शिक्षा तथा पुस्तकालयों का अन्योनाश्रित संबन्ध

मन की इसी समस्या को लेकर बीसवीं शताब्दी के प्रारम्भ से ही भारतीयों ने क्रांति का आह्वान किया——विद्यालय, महाविद्यालय और विश्वविद्यालय खुले तो साथ ही पुस्तकालयों का भी पुनरुद्धार हुआ। सर्व प्रथम १९०८ ई० में मि० बोर्डन की पुस्तकालयाध्यक्षता (Librarianship) में बड़ौदा में आधुनिक ढर्रे पर पुस्तकालय की योजना हुई। इस तरह इस शताब्दी के पुस्तकालय आन्दोलन का मार्ग प्रदर्शन सर्वप्रथम बड़ोदा नरेश ने ही किया।

४—अच्छे पुस्तकालयों की आवश्यकता

स्वराज्य प्राप्ति के बाद शिक्षा का प्रसार हुआ—ग्रन्थालयों की संख्या में भी अशातीत वृद्धि हुई लेकिन उनकी क्षमता ठप पड़ी रही। तो क्या यही पुस्तकालय-आन्दोलन है ? जी नहीं, कत्तई नहीं। ग्रन्थालयों की संख्या में वृद्धि कर हम मुक्त नहीं हो जाते। हमारा कर्त्तव्य वहीं समाप्त नहीं हो जाता। हम केवल पुस्तकालय की संख्या में वृद्धि नहीं चाहते बल्कि अच्छे पुस्तकालय चाहते हैं। हमें आज एक कृष्ण की आवश्यकता है, उनकी अठारह अक्षौहिणी सेना की नहीं। अच्छे पुस्तकालय के लिये यह आवश्यक है कि वे कार्यशील (efficient) हों तथा आज के वैज्ञानिक युगों की मांग पूरा करने में समर्थ हों।

डा० एस० आर० रंगनाथ ने ठीक ही कहा है कि निःशुल्क और अनिवार्य शिक्षा तब तक प्रहसन बनी रहेगी जब तक पुस्तकालयों की सुव्यवस्था न हो। यह तो उसी प्रकार होगा जिस तरह किसी सुन्दर मकान में छत का अभाव हो।

करोड़ों मील की दूरी आज कम हो गयी है लेकिन मानव से मानव अब भी दूर है। हृदय से हृदय दूर है। हृदय की दूरी जीतने के लिए यह आवश्यक है कि हममें अन्तर्राष्ट्रीय ज्ञान (International understuding) हो। हम एक दूसरे के सापेक्ष हों, जिसकी पूर्ति एक सम्पन्न पुस्तकालय में ही हो सकती है। भगवान् तथागत के समय में हम ज्ञान पिपासु थे लेकिन आज हममें ज्ञान की पिपासा नहीं रह गयी है। उसी ज्ञान-पिपासा को पुर्नजीवित करने के लिए हमें ग्रन्थालयों को जाग्रत अवस्था में लाना है, इन्हें ज्ञान का प्रकाश-स्तम्भ होना है, जनशिक्षा का अग्रदूत होना है !

भारत में पुस्तकालय-व्यवस्था का सुचारु रूप से संगठन संचालन के लिये कम से कम १२,००० प्रशिक्षित पुस्तकालयाध्यक्षों की आवश्यकता है। प्रशिक्षित का मतलब उन पुस्तकालयाध्यक्षों से है जो अपने को स्वदेशी घोषित कर वर्तमान युग के वैज्ञानिक मार्गों को पहचान सकते हों, जिन्हें दुनिया के सामने स्वार्थी बनकर सर झुकाकर नहीं बल्कि सर उठाकर बैठने की ताकत हो। समय की गति के साथ पुस्तकालयाध्यक्ष के कार्य में भी परिवर्तन आया है। आज के पुस्तकालयाध्यक्ष पहले जमाने ऐसे केवल पुस्तकों के रक्षक (custodian) ही नहीं हैं बल्कि उनकी उपयोगिताओं को प्रसारित करने वाले भी हैं। आज के युग की माँग के अनुसार पुराने का स्थान नया ग्रहण करेगा ही क्योंकि नयी-

नयी चीजें अपने नये-नये गुणों के साथ प्रदर्शित होती जा रही हैं। आमतौर पर हम देखते हैं कि मामूली-सी चोट लगने पर हकीम या वैद्य की अपेक्षा डाक्टर के पास ही दौड़ जाना पसन्द करते हैं। इससे हम यह निष्कर्ष निकालते हैं कि प्रगतिशील, उन्नतिशील एवं पूर्ण रूपेण विकसित होने के लिये पुराने का स्थान नया प्राप्त करेगा ही।

आज के पुस्तकालयाध्यक्ष तो केवल पुस्तकालयविज्ञान की उपाधि से विभूषित होने में ही अपने को धन्य समझने लगते हैं, पर स्थिति यह है कि वे अपनी उपाधियों में लगे 'विज्ञान' का सही अर्थ समझने में भी अपने को असमर्थ पाते हैं। विज्ञान का सही मतलब तो—"किसी ठोस सिद्धान्त पर आधारित क्रमिक ज्ञान को विकसित करना है।"

५—अनेकानेक गुणों की खान शिक्षा प्राप्ति ही है।

मानव आज आस्थाहीन हो गया है, उसमें निकास भावना (Escapism) घर करती जा रही है उसे अपने में विश्वास नहीं है—उसमें विश्वास की भावना (Self-confidence) प्रतिष्ठित करनी है। आज के प्रश्नयुक्त मानव को उत्तर देना है कि तुम्हारे जीवन का वास्तविक आनन्द तुम्हारे सच्चे कर्त्तव्य पथ पर आरूढ़ होने में है न कि मोक्ष में। यह केवल पुस्तकालयों में निहित एवं मनीषियों द्वारा प्रस्फुटित ज्ञान-भंडार के अवलोकन तथा मनन-चिन्तन के द्वारा ही संभव हो सकता है। जब तक इस प्रकार का प्रयास प्रत्येक नागरिक नहीं करता कि हमारा देश स्वतंत्र होते हुए भी मानसिक दासता की शृंखला से मुक्त हो तब तक 'कृण्वन्तौ विश्वमार्यम' की भावना एवं राष्ट्र की 'सत्यं शिवं सुन्दरम्' कल्पना को साकार करने में सफल नहीं हो सकेगा।

मुगलकालीन चित्रकला

कु० सुदक्षिणा अग्रवाल (पी० यू० सी०)
महिला महाविद्यालय

मुगलकाल में सम्पूर्ण कलाओं का बड़ा ही विकास हुआ। कला एवं साहित्य की दृष्टि से इस काल को स्वर्णयुग कहा जा सकता है। मुस्लिम कला का भारतीय कला पर भी प्रभाव पड़ा। धीरे-धीरे दोनों कलायें एक दूसरे के सम्पर्क में आईं और एक नई कला की शैली का जन्म हुआ जो मुगलकला-शैली कहलाती है।

यद्यपि यह कला अपनी उन्नति के चरमोत्कर्ष पर मुगल बादशाहों के काल में ही पहुँची थी फिर भी यह न समझना चाहिए कि इसके पहले मुस्लिम कला का कोई स्वरूप न था। इस कला का आरम्भ बहुत पहले ही हो गया था। कुरान में कलाओं का निषेध होने के कारण उमैयत वंश के खलीफाओं ने इसे बिलकुल ही प्रोत्साहन न दिया। पर १५२० से १६८० तक एवं ईरान के शाह अब्बास के शासन-काल से चित्रकला की उन्नति प्रारम्भ हुई। ८ वीं शताब्दी में खलीफा हारूँ रशीद का भी कला के प्रति झुकाव था। उसके महलों की दीवारों पर मनुष्यों के विभिन्न प्रकार के चित्र अंकित थे। उससे भी पहले ईरानी चित्रकला पर चीनी बौद्ध-कला का प्रभाव था। कालान्तर में इसने अपनी निजी शैली का विकास किया और यह ईरानी चित्रकला कहलाई। यह शैली १३ वीं शताब्दी में तुर्कों के राज्यकाल में भारतवर्ष में भारतीय पद्धति से विकसित हुई। उसके इस विकसित रूप को सुल्तान-युग की कला के नाम से पुकारा जाता है। ३०० वर्षों के सुल्तानी युग में मुसलमानी चित्रकला का यह मिलाजुला भारतीय-ईरानी रूप चलता रहा। इसका प्रभाव शुद्ध भारतीय कला पर भी पड़ा जैसा अपभ्रंश-कला (लगभग ११ वीं शती से १५ वीं शती) तक के चित्रों में देखा जाता है। १६ वीं शती के आरम्भ से सुल्तानी चित्रकला का नया विकास हुआ। उसके रंग, रेखा और विषयों ने एक नया मोड़ लिया और वह मुगल-कला के रूप में विकसित हुई। १६ वीं शताब्दी के मध्य में अकबर के राज्यकाल में इसका बड़े ही जोरों से विकास हुआ। मुगल कला के पूर्व इतिहास की यही कहानी है।

भारत में मुगलों के जमाने में इस कला के प्रवेश की भी एक कथा है।

शेरशाह सूरी से पराजित हुमाँयू जब निर्वासित होकर आश्रय की खोज में पश्चिमोत्तर प्रान्त की ओर भागा तब फरास में उसकी भेंट मीर सैयद अली और अब्दुस समर नामक दो चित्रकारों से हुई जो प्रसिद्ध फारसी चित्रकार बिहजाद के शिष्य थे। हुमाँयू उस समय निर्वासित अवस्था में था, अतः उनकी कुछ मदद न कर सका, पर उसने उन्हें वचन दिया कि अपना राज्य पुनः पाने पर वह उन्हें बुलायेगा। हुमाँयू अपने वचन को भूला नहीं। काबुल का राज्य पुनः पाने पर उसने उन्हें उनकी आशा के विपरीत ससम्मान दरबार में बुलाया तथा प्रसिद्ध पुस्तक दास्ताने अमीर हमजाद को चित्रांकित करने का आदेश दिया। अमीर हमजाद मुहम्मद साहब के चाचा थे। वे बड़े ही प्रभावशाली व्यक्ति थे।

जिन्नों और परियों से उनकी बहुत-सी लड़ाइयाँ हुई थीं। उन्हीं की दास्तान यानी लड़ाई इस पुस्तक में है।

हुमाँयू ने इसी पुस्तक को चित्रांकित करने का काम सौंपा। यह काम शुरू भी हुआ पर बीच में ही हुमाँयू की मृत्य हो गई। वह अपने इस स्वप्न का साकार रूप न देख सका। उसके इस अधूरे कार्य को उसके सुयोग्य पुत्र अकबर ने पूरा किया।

दास्ताने अमीर हमजाद के लगभग १४०० चित्र बन कर तैयार हुए थे। इन चित्रों की बहुत बड़ी विशेषता इनका कपड़े पर बना होना था। इनका आकार लगभग १ से २ फुट है। सौभाग्य से इसके करीब १२० चित्र अभी भी सुरक्षित हैं जिनमें से ४, ५ के लगभग भारत में प्राप्य हैं बाकी जर्मनी आदि विदेशों के संग्रहालयों में सुरक्षित हैं। इन चित्रों में परशियन प्रभाव स्पष्टतः झलकता है। मनुष्यों की आकृतियाँ, वेषभूषा, वातावरण सबमें परशियन प्रभाव है।

अकबर के शासन-काल में भी चित्रकला की बड़ी उन्नति हुई। चित्रकला के विकास के लिहाज से इसके शासन-काल को १५५६–१५६०, १५६०–१५६९, १५६९–१६०५, इन तीन कालों में विभक्त किया जा सकता है। १५५६–१५६० में कला की विशेष उन्नति नहीं हुई क्योंकि इस समय सम्राट् अपनी राजनीतिक स्थिति को दृढ़ करने के लिए युद्धों में लगा हुआ था। हाँ, दास्ताने अमीर हमजाद का कार्य अवश्य चलता रहा। १५६०-१५६९ के बीच में मुगल चित्रकला पर भारतीय प्रभाव पड़ना प्रारम्भ हुआ। इसकी झलक हम सर्वप्रथम १६६२ में बने हुए 'तानसेन का अकबर के दरबार में आगमन' नामक चित्र में पाते हैं। इसमें तानसेन का अकबर के दरबार में आना दिखाया गया है। परशियन प्रभाव दब रहा है तथा भारतीय प्रभाव की प्रमुखता आ रही है। अकबर ने चित्रकला का एक अलग विभाग खोला जिसका प्रमुख ख्वाजा अब्दुस समर को बनाया। अब्दुस समर की कला से प्रसन्न हो कर अकबर ने उसे 'शीरीं कलम' की उपाधि भी दी थी।

इसके समय में मिलने वाले चित्रों को हम दो भागों में विभक्त कर सकते हैं :—

१. उत्तरोत्तर बढ़ते हुए भारतीय प्रभाव वाले
२. ईरानी शैली के प्रभाव वाले

ईरानी प्रभाव की शैली के बने चित्रों में दास्ताने अमीर हमजाद के चित्रों के अलावा कुछ प्रमुख चित्र इस प्रकार हैं, बाज के साथ मनुष्य, मूसा की यात्रा, अकबर का सन्त के पास आना, किले पर धावा आदि। भारतीय शैली के बने हुए चित्रों में कुछ उल्लेखनीय चित्र इस प्रकार हैं, अकबर का सन्त के पास आना, राजा बीरबल का शबीह चित्र, राजा मानसिंह का शबीह चित्र आदि।

अकबर ने आगरे में एक कारखाने की स्थापना भी की जिसके अन्तर्गत चित्रकला में निपुण १०० से भी अधिक चित्रकार काम करते थे। वे गुजरात, कश्मीर, मध्य एशिया, पंजाब, ईरान से बुलाये गये थे। उन्हें अपनी इच्छानुसार चित्र बनाने की स्वतंत्रता थी। अतः प्रतिभाएँ विकसित हुईं। हिन्दू अधिक थे जिनमें भीम गुजराती और सूर गुजराती के नाम विशेष उल्लेखनीय हैं। मुगल-कला का गुजराती चित्रकला पर भी

अच्छा प्रभाव पड़ा, उसमें नोकीले डेढ़ चश्मी शबीह वाले चेहरों की अंकन-प्रथा समाप्त हो गई तथा उसका स्थान गोलाई लिए हुए एक चश्मी शबीह वाले चेहरों ने ले लिया।

उसके इस चित्र-कार्यालय में अनेक सचित्र ग्रंथों का निर्माण हुआ जिनमें बाबर-नामा, सिकन्दरनामा, महाभारत का अनुवाद (रज्मनामा), रामायण का फारसी अनुवाद, पंचतंत्र का अनुवाद (सुहेली), हरिवंश पुराण का अनुवाद, शाहनामा इत्यादि हैं। इनमें से बहुत से ग्रंथ आज भी सुरक्षित हैं तथा विविध संग्रहालयों की शोभा बढ़ा रहे हैं।

अकबर के समय में रंगों की उन्नति पर भी ध्यान दिया गया। चटकीले-भड़कीले रंगों का प्रयोग अधिक होता था, रंगों के साथ-साथ कागज एवं ब्रश में भी सुधार हुआ। अकबर ने राष्ट्रीय पुस्तकालय की भी स्थापना की जिसमें तरह-तरह के चित्रों के एलबम बनाये गये।

अकबर ने चित्रकला में भगवान की झलक देखी। उसका कथन था कि कला के द्वारा ईश्वर से साक्षत्कार किया जा सकता है। वह कहता था—जब चित्रकार चित्र की हूबहू नकल उतार देता है पर उसमें जान नहीं डाल पाता तब वह अपने से ऊँचे उस बनाने वाले की बड़ाई का कायल हो जाता है।

उसने हिन्दुओं की भित्ति-चित्रण नीति को अपनाया। सीकरी की दीवारों पर सफेदी करवा कर वहुत से भित्ति चित्र बनवाए। जिनमें भारतीय व ईरानी दोनों प्रकार की शैलियाँ मिलती हैं। इसके काल में शबीह बनाने की प्रथा का भी विकास हुआ।

इसके सोलह दरबारी चित्रकार प्रमुख थे। जिनमें अब्दुस समर, फारुखबेग, खुसरकुली, जमशेद ये चार मुसलमान एवं अन्य हिन्दू थे उनमें दसवन्त, बसावन, सांवलदास, ताराचन्द्र जगन्नाथ, लाल, केसू, मुकुन्द और हरिवंश आदि प्रमुख थे। अबुल फज़ल कहता है कि ये चित्रकला के पूरे उस्ताद बन गये थे।

जहाँगीर का काल चित्रकला का स्वर्णयुग था। इसके समय में चित्रकला की जितनी उन्नति हुई उतनी अन्य किसी भी मुग़ल बादशाह के युग में नहीं हुई। जहाँगीर स्वयं भी एक बड़ा अच्छा चित्रकार एवं चित्रकला का पारखी था। इसके समय में कला ने नया मोड़ लिया। सम्पूर्ण चित्र को कोई अकेला व्यक्ति नहीं बनाता था वरन् चित्र लिखने के अलग-अलग अंगों में होशियार मुस्विर होते थे, उन्हें यह काम सौंपा जाता था। जो व्यक्ति रेखांकन में चतुर होता था, वह चित्र में रेखायें करता था। जो दृश्य बनाने में निपुण था वह दृस्य बनाता था। जो रंग भरने में निपुण होता था वह रंग भरता था। इस प्रकार अनेक निपुण व्यक्तियों के हाथ के स्पर्श से चित्र अत्यन्त सुन्दर बन जाता था। इन चित्रों की एक बहुत बड़ी विशेषता यह ह कि कई हाथ लगने पर भी इसमें एकता और सामञ्जस्य है। जहाँगीर को चित्रों की बहुत अच्छी पहिचान थी। वह अपनी आत्मकथा में लिखता है कि मेरी आँखें इतनी निपुण हो गई हैं कि मैं देखकर बता सकता हूँ कि चित्र का कौन-सा भाग किस चित्रकार ने बनाया है।

इसके समय से ही सर्वप्रथम पशु-पक्षी, पेड़-पौधे, फूल आदि के चित्र बनाने का प्रचलन हुआ जिससे चित्रों में सौन्दर्य के साथ स्वाभाविकता का समावेश हो जाता था। पशु-पक्षियों के चित्र लिखने में उस्ताद मन्सूर का नाम उल्लेखनीय है।

जहाँगीर के समय में शबीह बनाने की प्रथा का भी बहुत विकास हुआ। जहाँगीर स्वयं इसमें बड़ी रुचि लेता था। इस कार्य में विसनदास का नाम प्रमुख रूप से लिया जाता है।

उसके दरबार के चित्रकार किसी भी चित्र की नकल करने में बड़े ही निपुण थे, इसका उदाहरण सर टामस रो के विवरण से ज्ञात होता है। जब वह जहाँगीर के दरबार में आया तब जहाँगीर ने उसे एक चित्र की पाँच प्रतियाँ जो उसके दरबारी चित्रकारों द्वारा बनाई गई थीं दिखाया और उनमें से मूल चित्र को निकालने के लिए कहा। पर उन चित्रों में इतना सादृश्य था कि सर टामस रो मूल चित्र एवं प्रतियों के बीच कोई भद न कर सका। उन चित्रों के रंग, भाव, आकृति, नक्स, वेश-भूषा सब में इतनी समानता थी कि अन्तर होना मुश्किल था।

जहाँगीर चिड़ियों एवं जानवरों के चित्र बनवाने में भी बड़ी रुचि लेता था। इसके लिए उसने दूर-दूर से दुष्प्राप्य चिड़ियाँ मँगवाई एवं अपने दरबारी चित्रकारों को उन्हें बनाने की आज्ञा दी। धीरे-धीरे उसका यह शौक एक बड़े चिड़ियाखाने में बदल गया। उसके कुछ चित्र आज भी सुरक्षित हैं। उन्हीं में एक सर्वश्रेष्ठ चित्र तुरकी मुर्गे का है जो आज भी कलकत्ते के संग्रहालय की शोभा बढ़ा रहा है। तितली एवं चिड़ियों के बने चित्र इतने सुन्दर हैं कि उनसे सुन्दर चित्रों की कल्पना भी कठिन है। चित्रों के चारों ओर हाशिये या बार्डर की प्रथा भी चल गई है।

जहाँगीर को प्रकृति से बड़ा ही प्रेम था। प्रकृति से प्रेम का अर्थ है स्वाभाविकता की ओर झुकाव। उसकी इस रुचि का प्रभाव उसके चित्रों में मिलता है। स्वाभाविक जीवन के चित्र बनाने का आदेश चित्रकारों को दिया गया। उसके निजी जीवन की घटनाएँ उसके समय के चित्रों का प्रधान विषय थीं। एक चित्र में गुलाबपाशी के दरबार का दृश्य है जिसमें जहाँगीर के चेहरे की खुशी का भाव तथा रंगों की सुन्दरता दर्शनीय है। जहाँगीर जब भी कहीं बाहर जाता था, चाहे युद्ध के लिए ही क्यों न हो, कुछ निपुण चित्रकारों के दल को अपने साथ अवश्य रखता था। जब भी कोई सुन्दर दृश्य मिलता था तो उसे चित्रांकित करने का आदेश दे देता था। शिकार खेलते हुए तथा अन्य विभिन्न मुद्राओं में उसके स्वयं के कई चित्र हैं।

जहाँगीर ने चित्रकला के द्वारा मानव प्रकृति को भी अपने वश में कर लिया था। युद्ध के समय अगर वह गर्म देश या गर्मी के मौसम में कहीं जाता था तो उसके तम्बू की दीवारों पर शीतकालीन बर्फीले देश बने रहते थे जो शीतका वातावरण उत्पन्न कर देते थे, इसी प्रकार जाड़ों में गर्मी का वातावरण उत्पन्न किया जाता था।

मुग़ल चित्रकारों की तूलिका के लिए शिकार का पीछा करने वाले दृश्यों को चित्रांकित करना एक बड़ा ही रोचक विषय हो गया था। इसीसे सम्बन्धित कुछ चित्रों का विषय है—शिकारी शेर का पीछा करते हुए, एक चित्र में शिकारी को शेर के आक्रमण से बाल-बाल बचते हुए दिखाया है। एक में शेर हाथी का शिकार करने के लिए हाथी के पीछे के भाग पर अपने नाखून लगा रहा है, आदि। उसके अन्य प्रमुख चित्र इस

प्रकार हैं : पागल शेख फूल, दरगाह शलिम चिस्ती, अजमेर में जहाँगीर का आगमन, अकबर और जहाँगीर, जहाँगीर उद्यान में, इत्यादि ।

जहाँगीर के समय खुशनबीसी (कैलिग्राफी) का भी बड़ा विकास हुआ। इसमें सुन्दर लिखावट पर बड़ा ही जोर दिया जाता था, तथा सुन्दरता के साथ सजा कर विभिन्न रंगों के स्पर्श से इस प्रकार लिखा जाता था कि वह लिखावट न होकर चित्र के सदृश्य जान पड़ती थी ।

जहाँगीर के समय में शबीह की भी बड़ी उन्नति हुई। इसके समय की कुछ शबीह आज भी हैं जिनमें जहाँगीरी सौन्दर्य, जहाँगीर और राजकुमार आदि प्रमुख हैं।

इसके काल में रंगों में भी बड़ी उन्नति हुई। अकबर के समय तो अधिक भड़कीले-चमकीले रंगों का प्रयोग होता था, पर इसके काल में रंगों में हल्कापन आ गया। स्वाभाविक हल्के एवं रंगत पैदा करने वाले रंगों का प्रयोग होने लगा। रेखाओं की बारीकी पर ध्यान दिया गया। चित्र में भावों की सूक्ष्मता एवं आकृति, वातावरण का ध्यान रक्खा जाने लगा। इसके समय के प्रसिद्ध चित्रकार थे : आकूजा और उसका लड़का, अबुल हसन, समरकन्द के मुहम्मद नादिर और मुहम्मद मुराद, उस्ताद मन्सूख। हिन्दुओं में विसनदास, मनोहर, माधव, तुलसी और गोबरधन आदि थे।

जहाँगीर के पश्चात् शाहजहाँ ने चित्रकला को जारी तो रक्खा पर उसे इतना प्रेम न था। उसका झुकाव स्थापत्यकला की ओर अधिक था। उसके समय के चित्रों में वह बारीकी और सौन्दर्य नहीं मिलता है जो जहाँगीर के समय के चित्रों में है। इसके समय में चित्रों में बारीक काम का प्रचलन समाप्त हो गया और उसका स्थान हाशियों ने ले लिया। चित्र के चारो ओर बहुत चौड़ा-चौड़ा हाशिया देते थे। अन्त में बीच में चित्र जिससे मुख्य चित्र का सौन्दर्य और महत्त्व कम हो जाता है। दर्शक का ध्यान मुख्य चित्र की ओर न जाकर हाशिये की ओर केन्द्रित होने लगा। उसके इस प्रकार के चित्रों का एक अच्छा उदाहरण मदन्मा और बच्चा नामक चित्र हैं।

इसके समय में रंगों में अद्भुत परिवर्तन हुआ। सोने का चूर्ण एवं अन्य कई रूपहले द्रव्य रंगों में मिला दिये गये। इससे रंगों में चटकीलापन अधिक आ गया। इसके समय के चित्रों में चित्रों की तरलता कुंठित अवश्य हो गई थी पर सौन्दर्य का भाव न था। स्वाभाविक भावों का अंकन जैसी कुशलता से जहाँगीर के चित्रों में होता था, उसका इसमें अभाव था।

शाहजहाँ के समय में दरबारी चित्रकारों की संख्या में जहाँगीर की अपेक्षा कमी हो गई थी। फकीरुल्ला, मीरहासिम, अनूपचित्रा आदि उसके समय के चित्रकार थे। उसका बड़ा पुत्र दाराशिकोह भी चित्रकला में बड़ी रुचि लेता था। उसने उत्कृष्ट चित्रों का एक संग्रह किया जो आज भी इण्डिया हाउस लाइब्रेरी लन्दन में सुरक्षित है। शाहजहाँ के समय के कुछ प्रमुख चित्र ये हैं :—शाहजहाँ का दरबार, शाहजहाँ अपने मयूर सिंहासन पर, नवाब सादुल्ला खां एवं राजकुमार शुजाकी दो शबीह।

औरंगजेब कला को मनुष्य के पतन का मार्ग समझता था। उसने अपने पूर्वजों की की हुई चित्रकारी को भी मिटाने का प्रयास किया जिसके फलस्वरूप उसने सीकरी की दीवारों पर सफेदी करवा दी। उसके समय में जो भी चित्रकारी हुई वह उसकी अनभिज्ञता में हुई। सम्पूर्ण चित्रकार दिल्ली दरबार को छोड़ कर इधर-उधर चले गये। उनमें से अधिकांश राजस्थान के राजाओं के पास चले गये जिन्होंने चित्रकला को बड़ा ही प्रोत्साहन दिया। मुग़ल कलाकारों की तूलिका का राजपूत चित्रकला पर भी प्रभाव पड़ा, उससे एक नई कला-शैली का जन्म हुआ जो मुग़ल-राजपूत चित्र-शैली कहलाती है और जिसके उत्कृष्ट उदाहरण अठारहवीं शती के राजस्थानी चित्रों में पाये जाते हैं।

THE PROBLEM OF DISGUISED UNEMPLOYMENT AND CAPITAL FORMATION IN INDIA

D. N. DVIVEDI

M. A. (*Econ.*) *Final*

The originator of the term 'disguised unemployment' Mrs Joan Robinson defined it as a kind of unemployment prevalent in almost all overpopulated, self-supporting, subsistence economies, where personal identification of unemployed persons is not possible. Physically, they seem to be employed ; virtually they produce nothing i.e. their contribution to the total production is nil. It is nil in the sense that they can be removed from the farm without affecting the total output. This type of unemployment is not likely to be found among wage-earners or where employers and employees are two separate bodies.

Sometimes, people confuse 'disguised unemployment' with "under employment". But there is significant difference between the two. Firstly, under disguised unemployment, the marginal productivity of self-employed labour is equal to zero, although average productivity remains positive. In the words of Dr. A. K. Dasgupta, "Seemingly, they seem to be employed but their employment is not wholly productive. It is not wholly productive in the sense that production does not suffer even if some of them so-called employed are withdrawn" (Econ. Weekly, Aug. 25, 1956). But in the case of under employment, marginal productivity of labour is not zero but less than one.

In "underemployment, those who, in Keynesion term, are "voluntarily unemployed, that is they, are not ready to accept the wage slightly less than their marginal productivity; and ultimately, having reached the position of starving, start some hand-to-mouth business, in which they produce less than their capacity, are included.

Dr. A. K. Sen clarifies the disguised unemployment with the help of a diagram. In this diagram, total output has been

measured along OY axis while OY shows number of labourers and OX shows the working hours.

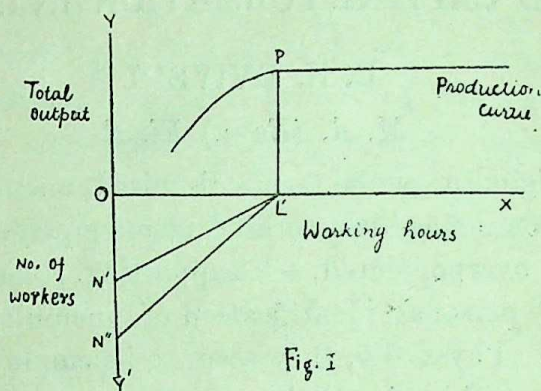
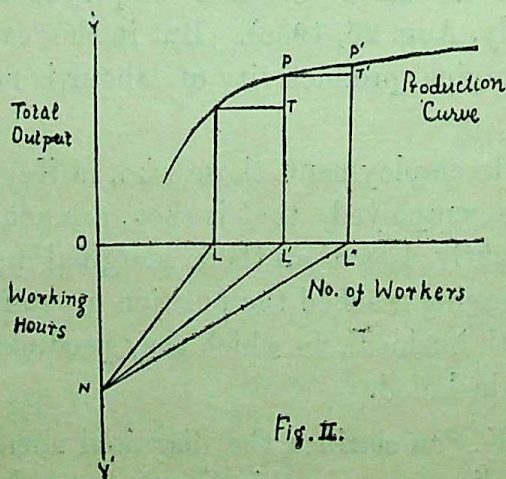
Fig. I

The diagram shows that a certain piece of land requires labour of ON′ men for OL hours per day and any addition to the number of workers or working hours will not increase the total output. But in a family based on agricultural economy, generaly persons are self-employed over and above ON′(working hours remaining the same) i.e. upto, for instance, ON″ while the contribution of N′N″ labourers to the total output is equal to zero, i.e. PL′ remains unchanged. They may be removed from the farm without having any diminution to the total output. The same diagram, after one minor change i. e., numbers of labourers is measured along horizontal, OX axis instead of vertical OY′ axis, may be employed to illustrate the number of employment.

Fig. II.

Working hours being fixed upto ON, if number of workers is increased from OL to OL′, the production will increase but not at the same rate. The same thing happens if number of workers are increased from OL′ to OL″. Production increases but the marginal productivity goes on decreasing. Having assumed TP as normal average production of L L′ labour, we can say that L′ L″ labour are under-employed because they are producing less than average. Here, furthar employment will stop if marginal productivitiy becomes zero. But in case of "disguised unemployment" labours are employed with even zero productivity.

Some economists regard disguised unemployment totally a seasonal phenomenon, but there are countries where some percentage of total agricultural labour force remains apparently employed for the whole year without contributing any thing positive. For instance, in Egypt, various crops are shown more than once a year and hardly, there is a time when some crop is not harvested and there, too, the range of disguised unemployment is estimated to be of the order of 40% to 50%.

India also has an overpopulated agricultural economy with disguised unemployment which, of course, is a perennial problem. Prof. J. B. Bhattacharya says, 'India provides a classic case of rural under-employment, particularly under emplyment among the farmers". Regarding measurement of unemployment in rural sector, Prof. Bhattacharya is correct to say......no quantitative estimates of direct type have been made regarding extent of the phenomenon of under-employment in agriculture.

But, during the second Plan, it was estimated to be of the order of 30% to 35%. Of course, a part of total volume of rural unemployment may be a seasonal variable. Exclusive of the seasonal part of total unemployment, unemployment in rural sector may be brought under the head of "disguised unemployment".

Now, the problem which confronts us is how to mobilise this surplus manpower for the purpose of economic development.

In the opinion of Prof. Nurkse the surplus manpower conceals saving potential behind it which can be mobilised for the purpose of capital formation. He argues that disguisedly unemployed persons contribute nothing to the total output i.e. their marginal productivity is zero; it means they live upon the savings of the productive members of their family. It implies that productive members have some saving potential and hence there is possibility of surplus. This surplus may be mobilised and capital formation may be financed out of it.

Recently, on the concept of surplus man-power backed by saving potential, Prof. C. N. Vakil and P. R. Brahmanand, have propounded 'Theory of Economic Growth'. The core of this theory is that planning in underdeveloped economies must take account of 'disguised unemployment' and saving potential of 'subsistence sector,' They are of the opinion that this process can only be initiated if the rate of employment exceeds the rate of growth of population. The argument in this connection is that if employment of one extra unit of labour requires wage-goods worth of Rs. 400 whereas actual consumption of that labour is Rs. 200 in subsistence sector, two units of labour can easily be employed if Rs. 400 is saved in planned sector. And withdrawal of two units of labour from subsistence sector will bring wage-goods worth of Rs. 400 which may be utilised for further employment of two units of surplus labour.

These theories suffer from defect that they are based on the assumptions to be found in developed countries. So they can not, directly and exactly, be applied to the conditions of under-developed countries. They can be applied only after certain modifications. They assume that (1) farmers are well off and have the capacity of saving, (2) the projects in industrial sector are ready at hand to absorb the transferred labour and new additiontoopen unemployment in the industrial sector, by increase of population. But none of the cases are found in underdeveloped countries, like India.

To bring out the solution, we may for the purposes of convenience divide this problem into four different heads, and consider them separately. These may be as (1) how to assess and mobilise the surplus man power, (2) what to do with the mobilised labour, (3) bringing out the case for saving potential (4) and lastly, how to mobilise the saving which is stuck in the rural sector. Now, our task is to analyse the problems and find out their solution.

1 Assessment of Surplus Man-power

Regarding the assessment and mobilization of surplus manpower, it has already been brought to the notice of the reader that identification of unemployed in agricultural sector does not seem to be possible. The assessment of surplus manpower demands redistribution of land, consolidation of holdings and pooling of uneconomic holdings, and their regrouping. Thus general redistribution of land becomes inevitable. This may be taken as prerequisite of the mobilisation of surplus labour. Further, it has been the characteristics of Indian farmers that they feel better at their farms, with less amenities of life than in the city with greater amenities and other facilities of life. So, in order to transfer surplus manpower from village sector to city, the making of urban life more and more attractive, particularly for the labourers, becomes indispensable.

2 Utilisation of Mobilised labour

Even if surplus manpower has been successfully estimated and mobilised, the problem arises what to do with the surplus of labour. It seems illogical to talk of transferring surplus labour from farms to factories, where as we have already a back log of 17 million of open unemployment during the period of Third Plan. Unless the existing unemployment problem is solved the transfer of rural unemployment from rural sector to urban sector will worsen the situation. According to the Planning Commission this problem will be solved up to 1975. But this is, not possible for various reasons, even upto the

end of our Fifth Plan. Firstly, the real magnitude of the problem is not clear. The estimated unemployment problem of 17 million during Third Plan excludes the disguised unemployment. So whenever we think of findiug out a solution to the problem of unemployment, we must bear in our mind that part of unemployment also which has been over looked by the Plans. Secondly, it has been our experience that employment could not reach its target during past two Plans. During the period of Second Plan employment could be increased only by 8 million as against the target of 14 million. During the First Plan period employment lagged by 3 million to reach the target of 9 million. Even in the Third Plan only current addition to the labour force is expected to be employed. There may, therefore, remain a vast gap to be covered by employment opportunities.

The intensity of the problem may, of course, be lessened by creating employment opportunities in rural sector and expanding industrial sector. So far as village sector is concerned the employment opportunities may be enlarged by encouragiug and developing cottage and small scale industries in the rural sector. It will not be a very hard task. The question of financing cottage and small scale industries is not so acute because raw materials are produced at the spot, labour is available at the same place, finance is required only for the purpose of purchasing tools and implements and for imparting training to the labourers. If they are trained once, they shall start the production of implements also in their cottage industries. In the initial stage work may be started with the existing pattern of tools which will be gradually modified and changed.

Similarly, some roads, drainage, and small barrages on the rivers may be constructed by undertaking, "*Sramadāna* Compaign". There is great enthusiasm among the villagers. If their enthusiasm is called in terms of labour, no villager will deny to surrender his few hours of daily labour for his own benifit. During the period from 1951-1953 most of the roads in villages were constructed by "*Sramadāna*". In this way, the disguisely unemployed persons may be persuaded to work for capital

formation which requires only tools etc. And it should be effectively tried to absorb them in the rural sector. Because the transfer of labour from villages to cities creates the problem of feeding them in the urban sector. Prof. Nurkse has suggested that the saving potential, i.e. what they were consuming previously while living on the farms should be simultaneously transferred. But the transfer of saving potential is not so easy for the following reasons.

Firsly, the transfer of a part of agricultural labour, will lessen the burden of persons living in the village sector. It may stimulate their consumption. Increase in their consumption will necessarily lessen the saving potential. Secondly, the persons who were previously unemployed and were satisfied with what they could be availed by their relatives, being employed on, productive projects, will demand more to consume to maintain themselves in working order.

Thirdly, the transfer of food may involve some transfer cost, and transfer of labour also, which was neglected by Prof. Nurkse, counts much in lessening the saving potential.

Fourthly, the tranfer of labour becomes inflationary which again compresses the saving potential. Labour employed in industrial sector will command over purchasing power and increase the demand. Increasing demand will increase the prices of other commodities. A.M. Khusro, in his 'occaisional papers' entitled as "Economic Development with No population Transfer" writes, "Nurkse, perhaps, minimised the importance of these leakages, but it is obvious that these (transfer and other impediments) are inflationary in character in the sense that when provision is made for them, the surplus of food that remains to be transferred does not match the normal demand for food by the transferred workers".

3 Cases for Saving Potential

It may be argued that in case of India, the problem becomes more acute because the current income is not sufficient

even for maintenance and hence cultivation have to incur debts for consumption and investment in agriculture. The "All India Rural credit follow up Survey" (1959-60) furnishes data to reveal the fact that borrowing for the purpose of family expenditure accounted for 3/5 or more of the total borrowings and more than 45% borrowings were for the agricultural purposes. In some districts under Survey, borrowings towards purchase of livestock constituted the major part of borrowings towards agricultural purposes. Further, it is commonly accepted fact that more than 60% of the peasants are underfed. In such a condition to talk of saving potential does not seem to be justifiable.

But it does not mean that there is no hope for development through surplus manpower and we should leave the front. There still remains one way out. The emergence of saving potential may be advocated on the ground that agricultural production has increased during the Second Plan at a higher rate than the rate of growth in population. Although this increase in agricultural production could not reach the target, increase in the food grain was by 46% while the population increased only by 21%. After all, India is "forward among the backwards." Therefore, inspite of the fact, that villagers are underfed a major part of our population lives in the villages, there is possibility of saving potential in the rural sector. But it should be noted in this connection that saving cannot be flown out of village sector; it can be wrested. Persons living on the farms and relieved of their unproductive dependents should not be allowed to increase their consumption. That is possible only through maintaining the consumption at previous level and taxing the surplus or mobilising it through compulsory saving schemes. Although compulsory saving is scarcely desirable and practicable in a democratic country, it is desirable in the sense that if people are compelled to consume a bit less today, they may be provided more tomorrow. So we reach to the conclusion that there is possibility of wresting saving potential from the agricultural sector.

4 Mobilisation of Saving Potential

Even if we are able to maintain the consumption at its previous level, the most difficult problem which confronts us is how to mobilise the surplus. In a democratic country direct high taxation, compulsory saving, or any step like this is difficult to be materialised. Such steps may create discontent among the farmers which is a broad ground for revolt. The levies i.e. tax burden put over the farmers, may reduce incentive to increase the production. Although this difficulty may be lessened to some extent by making taxation sugar-coated-repayment of debt. But administrative maladies may, again, bring in bottlenecks in the way—transfer of surplus from agricultural to industrial sector, which demands the tightening of administrative machinary.

I find it admisible to examine here what has been suggested by Prof. Lewis. In every subsistence economy, according to him, there exist two classes : agricultural and industrial. Former having a higher propensity to consume can not save, if any, a negligible amount. It is the other class, i.e. industrial class, which may come forward to finance capital formation, because they have sufficient saving, on the basis of private ownership. Since the individual is motivated by profit, such a case we have not seen in India. Because undertaking the task of capital formation, particularly in village area may not ensure them profit instantly. Therefore, the best alternative before the Government remains to tax the capitalists class which has higher propensity to save, and start the development programme. But the taxation policy should not be so as to snatch the incentives for individual entrepreneurs. Inadequacy, it any, may be covered by imninflationary dificit financing, if possible.

ISOLATING MECHANISMS : AS A FACTOR IN SPECIATION

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The diversification of immense taxa is the product of age-long processes of evolutionary development. In the long run of untraceable organic evolution as a result of complex factors, isolated populations have developed into clearcut biological units known as species. In fact the origin of these species lies in the development of barriers which prevent or restrict the extent of free exchange of hereditary factors between Mendelian populations by the help of isolation mechanisms. These are the tools which break or divide large population into various sub-populations or groups each forming more or less a breeding unit by itself. In nature there are many such mechanisms, preventing the pooling of hereditary factors (genes) of diverging groups and therefore in permitting the development of genetic discontinuity among these populations. These mechanisms act at two levels of organic development—firstly in the prevention of fertilization and secondly in the reproduction of hybrids. In the first category there are various environmental or external factors such as geographical, ecological, seasonal, etc. barriers to cross-fetilization while second category includes genetic or internal barriers which act mostly after the parental gametes have united in fertilization (i. e, during the development of zygote to the reproductive stages in later generations and result in formation of weak, unviable, aberrant or sterile hybrids).

Environmental isolating mechanisms constitute of geographical, ecological and seasonal mechanisms. Geographical isolation is one of the primary barriers which initiates speciation. With wide agencies of dispersion prevailing in nature, species scatter over long global surface and grow in complex geographi-

cal conditions becoming genotypically and phenotypically differentiated into ecotypes, races and then into species. However geographical isolation alone and as such would not bring origin of new species but stages for necessary conditions like accumulation of different mutations at different localities which initiates and leads to race formation. Some of the races gradually become very different in genetic structure and external appearance from other and apparently look like species. But this type of isolation is not a complete criterion for speciation because the differentiated species when brought together, invariably cross and produce fertile hybrids. Examples of this type have been amply given by Stebbins (1950) in Genus Quercus.

Ecological isolation gives a number of isolated population and prevent them from meeting or mating, for example Tradescantia canaliculata grows in full sunlight at the top of a cliff and related specie T. subspera in the shade at the bottom of the cliff. But where erosion breaks the cliff, the two species come together and produce hybrids. So this isolation also can not be a fix criterion for differentiation but operates as an accessory mechanism to reinforce the genetic discontiunity produced by other mechanisms. Seasonal isolation produces the same effects as ecological isolation but operates through a time factor (blooming, breeding times etc.), for example in toads Bufo americanus breeds earlier in spring as related specie B. fowleri but when the breeding period overlaps a hybrid swarm is produced and there is a increase in gene flow between two species.

Genetic isolating mechanisms after fertilization

Even after successful fertilization a number of mechanisms check the growth and reproduction of hybrids. Some of such mechanisms are hybrid inviability and hybrid sterility. Hybrid inviability is common genetic isolating mechanism where fertilization between two species is accomplished, but zygote fails to develop normally due to a number of reasons. Successful fertilization, zygote and embryo development depend

on delicate balance between action and interaction of many factors. The upset of this balance resulting from interspecific fertilization leads the hybrids weak and unviable. This upset arise due to disagreement between uniting gametes as a result of disharmony between genes, differences in chromosome number, size, shape and behaviour and other interactions; cytoplasmic and somatoplastic differences and disturbances between embryo-endosperm relations. Examples of these situations are very many but mostly have been observed in Genus Nicotiana, Epilobium and Datura (Stebbins 1958).

Hybrid sterility though allows the formation of mature hybrids between the two parental species but renders F1 sterile, incapable of further reproduction. Two species of flax Linum austriacum and L. perenne can be crossed but the hybrid seeds fail to grow. Hybrid sterility is the major bottle-neck in the plant-improvement work at present and is as such much worked out problem. The diversity of hybrid sterility shows many mechanisms in nature. It can be genic or chromosomal. Genic sterility is more prevalent in animal kingdom than in plants. Genic sterility in hybrids Drosophylla virilis and D. americana have been described by Patterson, Stone and Griffen (1940). The fertility of the hybrids is highly reduced (25%) and hybrids in F2 are likewise sterile. This type of sterility occurs due to failure of meiotic process or by other genetically controlled meiotic abnormalities such as degeneration of spore tetrads, abnormalities of spindle formation, genetically controlled asynapsis or desynapsis and lack of synchronisation of various metabolic processes which take place in early meiosis. Chromosomal sterility manifests through disturbance in meiosis with relations and configurations of chromosomes. Such behaviours have been noted in Genus Crepis, Lycopersicum (Lycopersicum esculentum x L. peruvianum), and Nicotiana (Nicotiana sylvestris x N. tomentosiformis). Stebbins (1950) has very nicely illustrated it in genus primula. The F1 of the cross between Primula verticillata and P. floribunda forms nine bivalents but is sterile. When it is doubled, it forms eighteen bivalents and is fully fertile. He

explained the sterility of F1 hybrids due to Cryptic structural changes (inversion of a segment followed by reinversion causing small structural differences).

Oka (1957) has described in Oryza (Indica × Japonica) crosses a combination of genic and chromosomal sterility. He explained that both disharmonius effects of genes as well as results of deficiencies and duplications of chromosomal segments are operating to produce hybrid sterility in genus Oryza.

Genic-cytoplasmic male sterility in Onian has been described by Jone and Davis (1944). They emphasised that such a system of genic-cytoplasmic sterility causes a population to become partially isolated genetically and initiates speciation by segregation of appropriate combinations.

Isolating mechanisms after one generation of Hybrid formation

In some of the hybrid combinations though the F1 (first filial generation) is fully fertile but in F2 or later generations segregates are either weak or sterile. The genetic barrier is effective late in hybrid generation but prevents the flow of gene pool alright. In Drosophylla the F1 of the cross between Drosophylla pseudobscura and D. persimilis is fertile and vigorous but F2 decreases in viability and degnerates. In cotton F1 hybrids between Gossypium arboreum and G. herbaceum is likewise vigorous and fertile (Hutchinson 1940) but F2 progenies are too weak to survive. This type of break down of hybrids have been explained on the basis of disharmonius interaction between combination of genes of parental species and the upset of intricate genetic balance due to deficiency and duplication of small chromosomal segments (Cryptic structural hybridity).

Discussion and Conclusions

It is evident from the above lines that in nature exists a great diversity of isolating mechanisms, operating singly or simultaneously at various stages of plant and animal life. Different patterns of mechanisms, physiological, mechanical, gametophytic, abortive etc. together with a large number

of unknown mechanisms play role in speciation. The origin of these isolating mechanisms is also not less controversial and different workers present different views through a variety of materials studied. This reveals the complexity of the situation most of which is still undiscovered. In nature large number of mechanisms operate simultaneously and speciation is brought about by there joint efforts as seen in the genus Drosophylla, Crepis and Tradescantia.

Morphological, physiological and cytological differences between species reflect ultimately the differences in their genetic constitution but morphological differences in genus Tradescantia (Tradescantia canaliculata and T. subspera) and morphological similarities in genus Drosophylla (Drosophylla pseudobscura and D. persimilis) do not reveal the real situation. So the essence of speciation as accepted by many workers lies in the development of reproductive or genetic barriers which prevent or restrict the free flow of hereditary material between two mendelian populations and the operation of such isolation is thus considered essential before two groups can be referred to as distinct species. Such a process is perhaps responsible for the immense diversity of organic life met within a relatively restricted area. It is here that tbe isolating mechanisms are of importance. These mechanisms first separate the two groups or population genetically and then help them maintaining and safeguarding their biological identity, characteristics and features, no matter how close they situate, how close they grow. Therefore the development of such mechanisms is most important and essential in speciation.

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FEMALE ASCETICS IN THE KATHASARITSAGARA

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1. *Introduction*

In the Kathāsaritsāgara we often come across female ascetics who occasionally play an important role in the lives of the heroes and the heroines of the stories narrated in this work.

2. *The costume of a female ascetic*

In the story of Kamalākara and Hansāvalī we find Kanakamañjarī in disguise of a female ascetic. She was dressed in deer skin, had her hair matted and she carried a rosary of Akṣa beads.[1] In the Bṛihatkathāmañjarī, Kanakamañjarī put on false matted hair and in black deer-skin which she wore so tightly that it pained her high breasts, she a beautiful young woman, looked like the moon in the grip of Rāhu.[2] In another place we find the night described as a female ascetic. The description runs as follows, "and then appeared the horrible female ascetic called night, furnished with many stars by way of a bone-necklace, white with moonlight instead of ashes, and carrying the moon for a gleaming skull."[3] Here we get reference to a female ascetic belonging to the 'Tāntric' sect. The night is a female ascetic wearing a bone-necklace, with her body besmeared with ashes, and carrying a human skull in her hands.

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[1] इत्युक्ता प्रेषिता स्वैरं तया कनकमंजरीम् ।
साक्षसूत्रजिनजटं तापसी वेषडम्वरम् ।। K. S. S. 71.

[2] वद्धकूटजटा-जूटा ततः कनकमञ्जरी ।
कृष्णाजिनोत्तरासङ्गपीडितोच्चकुचस्थली ।।३३५
राहुग्रस्तस्य शीतांशोरिव प्रव्रजिता द्युतिः ।
द्रष्टुं तपस्विनीवेषा प्रययौ कमलाकरम् ।।३२६
B. K. M.; Ch 9; Story of Hansavati.

[3] आगात्तारास्थिमालाक्ष्याज्योत्सनामूर्तिसिता ततः ।
शशिशुभ्रकपाला च रौद्री रजनितापसी ।।
K. S. S.; Ch. 123; V. 211.

3. *Their living place*

The female ascetics lived in monasteries along with their pupils. The Buddhist female ascetic Yogakaraṇḍikā lived in her monastery along with her pupil Siddhikarī.[1] The merchants from Kaṭāha went to see her in her monastery. And Yogakaraṇḍikā accommodated these foreign merchants in her own monastery.[2]

4. *Social status of the female ascetics*

It was the custom with the people to show great respect to female ascetics. When the Buddhist female ascetic Yogakaraṇḍikā paid a visit to Devasmitā, the young wife of merchant Guhasena, the latter received her with honour.[3] In the Bṛihatkathāmañjarī Devasmitā received Yogakaraṇḍikā with flowers seat etc., the usual way of receiving a revered guest.[4]

In the story of Kamalākara and Hansāvalī we get a picture as to how a female ascetic was supposed to behave when she paid visit to any respectable personage like a king or a prince. Kanakamañjarī went to the camp of prince Kamalākara in the disguise of a female ascetic. She was introduced by the attendants of the prince into the camp. She sat down, then blessed the prince, gave him a jewel as a gift and did not talk much.[5]

The female ascetics held honoured position. They could claim a show of respect even from high personages like kings or princes. It was a respect due to the saffron robe. One day prince Sundarasena was going on hunting. A female mendicant named Kātyāyanī saw him on the way and greeted him with the words, "Be victorious, 0 prince". The prince occupied in

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[1] तत्रोपायं विचिन्वन्तः सुगतायनस्थिताम् ।
प्रव्राजिकामुपाजग्मुर्नाम्ना योगकरण्डिकाम् ॥
K. S. S.; 13; verse 88.

[2] वणिकसुतानां चैतेषां स्वगृहं स्थितये ददौ ।
K. S. S.; 13; verse 116.

[3] K. S. S.; 13; verses 119-120.

[4] Bṛihatkathāmañjarī; Ch. 2; Story of Devasmitā; verse 213.

[5] K. S. S.; 71; verses 131-137.

conversation, did not hear her and did not repay her greetings.[1] The female ascetic Kātyāyanī got angry and said, "Prince, why do you not listen to the blessings of such a one as I am? What king or prince is there on the earth who does not honour me".[2] The prince got conscious and he apologised. Thus a female ascetic could claim a show of due respect from men of high rank.

Sometimes a female ascetic got position in royal court. A female ascetic named Saṃkrityāyanī lived in the royal court of Ujjayinī. She came to Kausāmbī along with princess Vāsavadattā when the latter married king Udayana. This pious lady made up the misunderstanding between the king Udayana and queen Vāsavadattā when the latter was angry and unhappy for the king's secret love resulting in marriage with princess Bandhumatī, a captive of war.[3]

5. *Their activities*

(*a*) *Social activities*—The female ascetics who were in the habit of travelling distant lands, had easy access into royal families. Sometimes they played the role of matchmakers among the princely class. It was the female ascetic Kātyāyanī who effected the marriage of prince Sundarasena with Mandāravatī, the princess of the Hansadvīpa[4]. The more active part was played by a female ascetic who suggested first and arranged the marriage of prince Hiraṇyākṣa of Hiraṇyapura with princess Mṛigāṅkalekhā[5].

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[1] कुमार विजयस्वेति वदन्ती प्रणनाय सा । K.S.S.; 101. verse 5-7

[2] सोऽपि सुन्दरसेनस्तदताकर्णेव तत्क्षणम् ।
ययौ स्वसचिवारब्ध कथाव्याग्रेण चेतसा ।। ५
अथोच्चैः श्रावयन्ती तं सा क्रुद्धोवाच तापसी ।
न श्रृणोष्याशिषं कस्याद्राजपुत्र ममाप्यहो ।।
कस्याहं नार्चिता पृथिव्यां राज्ञो राजसुतस्य वा·········।।
K.S.S.; 101; verses 58-60.

[3] ततः प्रव्राजिकां तस्याः सखी पितृकुलागताम् ।
स सांकृत्यायनीं नाम शरणं शिश्रिये नृपः ।। K.S.S.; 14; verses 66-72.

[4] K.S.S.; 101.

[5] K.S.S.; 65.

The female ascetics did not live in seclusion. It was not forbidden for them to accommodate men in their 'aśramas' or to associate with them. Thus they could be of much help to foreigners visiting a country. We have already seen in the story of Devasmitā that the merchants from Kaṭāha (Kaṭākṣa) got accommodation in the monastery of the female ascetic Yogakaraṇḍikā.

In the story of king Vikramāditya, we find a similar thing. The king Vikramāditya once dreamt a dream in which he crossed a sea and reached a land where he was at once surrounded by a band of armed maidens who raised a cry 'kill, kill'. He was saved by a female ascetic who gave him shelter and said to him that the princess of the land hated men. The moment she saw a man she would have him killed by those maidens of hers.[1]

The female ascetics were supposed to possess supernatural power. In the story of Niśchayadatta, we find that a good hearted female ascetic Mokṣadā by name, possessed magic power. She freed the Brahmin Somasvāmin from the shape of an ape into which he had been transformed by magic.[2]

Regarding their spiritual activities we do not get any idea. They were however often on move roaming about distant foreign lands. The female ascetic Kātyāyanī told prince Sundarasena that she was in the habit of wandering about the whole of the earth.[3] When she met the prince, in the story, she was just returning from a tour of this wonderful earth.[4]

Princess Hemprabhā of Ratnākara was leading the life of asceticism in the forest. One day there came to her hermitage a female mendicant. This female mendicant was roaming

[1] K.S.S. (Eng. Tr.) Vol. II, C.H. Tawney, p. 588.

[2] K.S.S.; 37; verses 238-241

[3] K. S. S.; 101.
तीर्थादिहेतोः सद्वीपां भ्रमामि पृथिवीमियाम् ।६७

[4] आश्चर्यशालिनीं पृथ्वीं भ्रान्त्वा सा वीक्ष्य तं पुरः ।
B.·K. M.; Ch. 9; V. 1285

about, having observed a vow of chastity from her earliest youth.[1]

The first state in the life of an ascetic is 'pravrajyā' that is roaming about here and there, instead of staying in the family. In the Kathāsaritsāgara, we get reference only to this stage of life of a female ascetic. We do not get any other account of their spiritual pursuits.

(*b*) *Rogues in the guise of female ascetics*—The Kathāsaritsagara gives us an idea that rogues in the guise of female ascetics were very common.

It the 'story of Devasmitā' we find that four wicked and licentious merchants came from Kaṭāha (in the Bṛihathāmañjarī it is 'Katākṣa' which I think is the pure Sanskrit form) Devasmitā's husband has gone to Kaṭāha on trade. These four Katāhan merchants had come to know from him about his wife Devasmitā and also about their deep conjugal love. They came to Tāmralipti having made a wicked plan of seducing Devasmitā. For the success of their wicked design they thought it right to take the help of a Buddhist female ascetic. So having reached Tāmralipti they re-paired to the monastery of the old female ascetic Yogakaraṇḍikā.[2] Then the merchants without hesitation went to the house of the female ascetic, it shows that such female ascetics were quite common who unscrupulously participated in bad deeds and carried out immoral and criminal designs. From the conversation of Yogakaraṇḍikā with the merchants it becomes clear that bad young man for the purpose of seducing women of respectable families took the help of such female ascetics. The four Kaṭāhan merchants having reached the monastery of Yogakaraṇḍikā said to her in an affectionate manner, "Revered madam, if our object is accomplished by your help, we will give you much wealth."[3] She answered them "No doubt

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[1] प्रव्राजिकैका भ्राम्यन्ती कौमारब्रह्मचारिणी ।।१५५
K.S.S.; 66; 155.

[2] K.S.S.; 13.

[3] प्रीतिपूर्वं च तामूचुर्भगवत्यस्मदीप्सितम् ।
साध्यते चेत्वया तत्ते दास्यामोऽर्थान्बहूनिति ।
K.S.S.; 13. 89

you young men desire some woman in the city; so tell me all about it, I will procure for you the object of your desire, but I have no wish for money; I have a pupil of distinguished ability named Siddhikarī; owing to her kindness I have obtained untold wealth."[1]

Thus we find that the cunning Yogakaraṇḍikā at once understood the purpose of the visit of those young merchants and agreed to help them. It is clear that she regularly practised such immoral deeds.

Being told that it was Devasmitā she went to the house of Devasmitā and tried to seduce her by saying that it is the duty of a young woman, if deprived of the company of her husband, to satisfy her desires in other ways. Devasmitā, the virtuous lady defeated the old female ascetic in the most bold and clever way. This is a tale of the triumph of virtue over vice.

These unscrupulous female ascetics dared to interfere even in the affairs of royal families and play their wicked role there too.

King Dṛiḍhavarman of Madhyadeśa married the hermit-girl Kadalīgarbhā and brought her to the palace of his capital. The headqueen of the king got jealous and in her desire to get rid of Kadalīgarbhā she called the minister and requested him to help her in that matter. What the minister said in reply is significant. He said, "Queen, it is not appropriate for pepole like me to destroy or banish their master's wives. This is the business of the wives of wandering religious mendicants addicted to jugglery and such practices, associating with men like themselves. For these hypocritical feamale ascetics, creeping unforbidden into houses, skilled in deception, will

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[1] साप्युवाच ध्रुवं यूनां कापि स्त्री वाछिंतेह वः ।
तद्ब्रूह साधयाम्येव धनलिप्सा च नास्ति मे ।
अस्ति सिद्धिकरी नाम शिष्या मे बुद्धिशालिनी,
तत्प्रसादेन संप्राप्तमसख्यं हि धनं मया ।
K.S.S,; 13; 50, 51.

stick at no deed whatever."[1] These words of the minister portray the opinion about these female ascetics and give us the true picture of their nature and activities.

Then the queen called a wandering female ascetic, who agreeing to help her, planned with a barber. The latter decided not to kill the new queen but to make her leave the palace for sometime so that ultimately she would be reunited to the king. And thus they hoped they would be rewarded from both the sides. Their plan was successful up to the end. Even the king was a victim of their sinister plan. The new queen had to go away; after some time she was reunited to her lord; it all happened according to the plan of the barber and the female ascetic.[2]

When the merchants from Kaṭāha reached Tāmralipti and went to Yogakaraṇḍikā the latter narrated to them the story of the daring robbery of her pupil Siddhikarī. Yogakaraṇḍikā was proud of the criminal acts of Siddhikarī who was a woman of 'distinguished abilities' in her words.[3]

Conclusion

Thus the general impressien that we get about the female ascetics specially those of Buddhist order, is no doubt very bad. Perhaps only those who being of royal or respectable families chose the life of asceticism of their free will, led genuinely pious and spiritual life. But the rest were usually rogues and people were well aware of their nature and ways. It is strange that

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[1] तच्छ्रुत्वा सोऽब्रवीत्मन्त्री देवि कर्तुं न युज्यते ।
मादृशानां प्रभोः पत्न्यया विनाशयन वियोजनम् ॥
एष प्रव्राजकस्त्रीणां विषयः कुहकादिषु ।
प्रयोगेष्वभियुक्तानां संगतानां तथाविधैः ॥
ता हि कैतवतापस्यः प्रविश्यैवानिवारिताः ।
गृहेषु मायाकुशलाः कर्म किं किं न कुर्वते ॥
इत्युक्ता तेन सा देवि विनतेवाह तं ह्रिया ।
अलं तर्हि ममानेन गर्हितेन सतामिति ॥ K.S.S.; 32; 124-127

[2] K.S.S.; ch. 32.

[3] एवंविधा हि मच्छिष्या बहुप्रज्ञानशालिनी । K.S.S.; ch. 13; verse 112.

nowhere we find the persecution of these pepole by the state. Sometimes they just suffered punishment at the hands of some angry individuals who was troubled by them or who perceived the evil design of any of them against himself or herself. Thus Devasmitā, the bold and clever lady, punished the wicked Yogakaraṇḍikā who tried to seduce her. Devasmitā made her drink wine and thus having made her senseless, she cut off her ears and nose.[1]

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[1] तेनैव मधुना मत्तां कृत्वा योग करण्डिकाम् ।
कर्णनासा विरहितां तच्छिष्यां च वणिग्वधूः ।।
B.K.M.; 2; story of Devasmitā; v, 263.
K.S.S.; 13.

HOW ANIMALS PROCURE FOOD

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'One animal's meat is another animal's food'—so runs the adage and this is also the crux of the struggle for existence. From animals' point of view, however, it is not the truth of this statement but the method of procuring the meat that is important. For, to be able to kill not only requires strength but also some ingenious device to tempt the prey to come within the fatal folds of the captor. Animals, therefore, have constantly engaged themselves in devising ways and means to intrigue their preys while the latter, to evade them. Yet, the battle has been going on and on and the animals have been falling preys to one or the other.
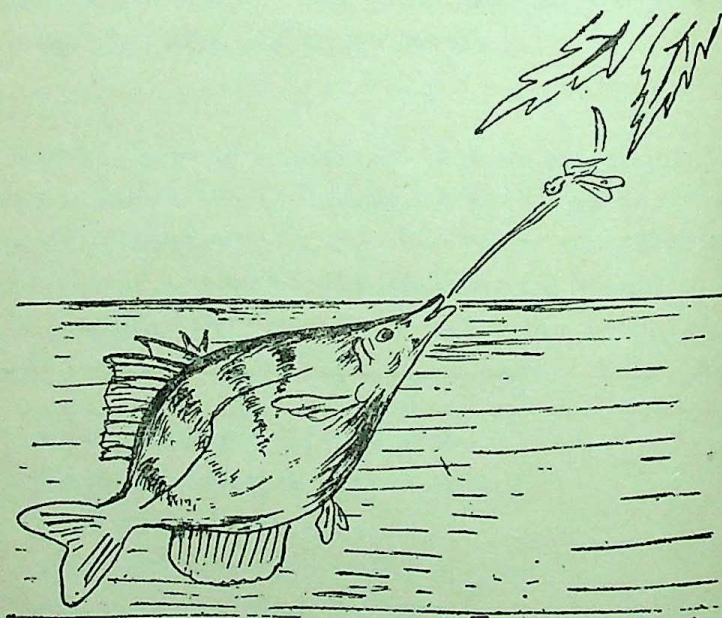
Fig. 1. The archer-fish hitting the prey with a water jet.

The fishes, for instance, have evolved interesting ways of capturing their preys. The remarkable Archer fish (*Toxotes*) of East Indies has a mouth which functions as a water-gun. An insect poised on plant above water or on shore is brought

down by a sharp jet of water ejected from its mouth. Its accuracy to shoot is just deadly. Strange as it may sound, man has learnt fishing by rod and line from the fishes themselves. There are several anglers amongst fishes who carry
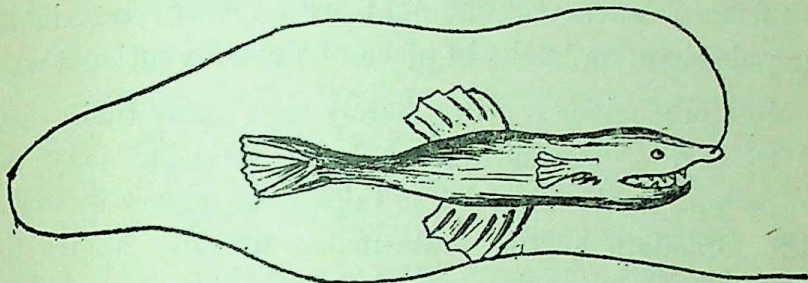
Fig. 2. The angler fish with its line 4 times longer than itself.

their own lines with them. The fish *Gigantactis maeronema* has a line four times as long as itself. On seeing its prey, it throws the line and itself stays motionless. The prey taking the line for a worm, bites at it only to find itself in the mouth of the fish. The deep sea anglers have their lines provided with a
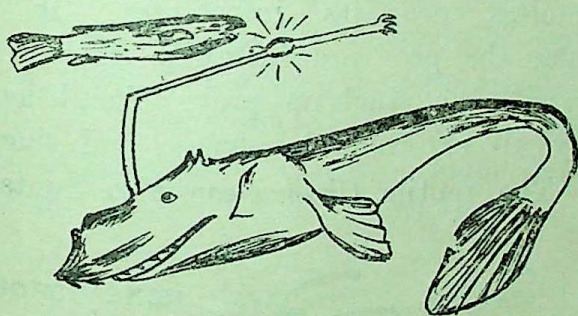
Fig. 3. The deep-sea angler is tempting its prey by a luminous bulb on its line.
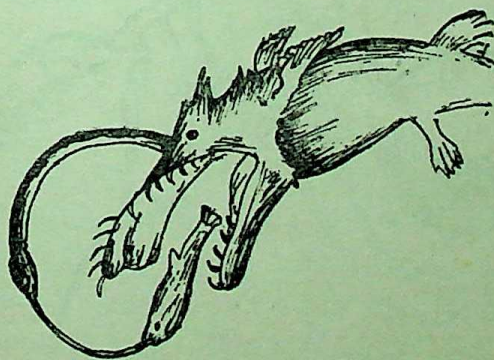
Fig. 4. No escape now !

median luminous bulb and terminal hooks. The bulb renders the line visible to the prey in the darkness of the abyss and the hooks do not let the prey escape once it has bitten at them. This method is advantageously imitated by the west Indian fishermen who cut the light organs from certain fishes and impale them on hooks in place of the conventional worms.

Most predacious reptiles merely rely upon their resemblance to their surroundings such as stranded logs, weedy stones or mud banks whereby to take their quarry by surprise. But the Brazilian turtle, mata-mata, literally angles for its prey. On the creature's very deficient chin is a worm-like filament of skin which is generally waved in the water. Sooner or later, a fish mistakes it for a worm and such is the turtle's quickness of movement that the victim discovers its mistake only too late. There are several animals who employ their tongue to capture food. The frog, for one, has a very sticky and thick tongue, free behind unlike other animals. Sitting motionless near its insect-prey, it shoots its tongue out over the prey and instantly drags it within the mouth along with the stuck up prey. The litheness of this process betrays all external clumsyness and sluggishness of the creature. The reptile *Chamaeleon* also hunts by tongue
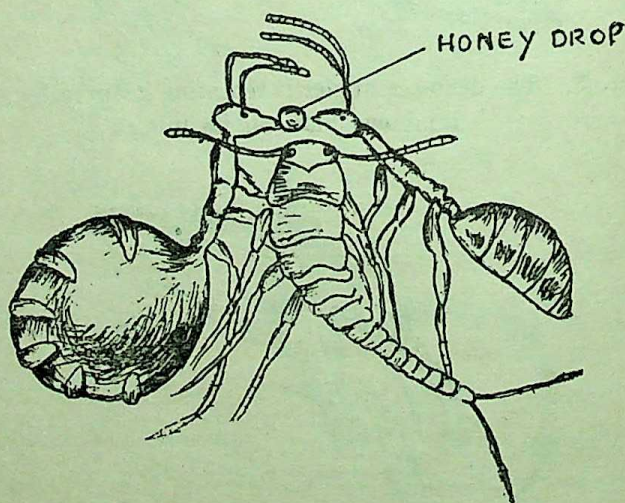
Fig. 5. The silver fish ready to snatch the honey from the ants.

but its tongue is extraordinarily long, mobile and free infront, as in all animals. The ant-eaters are another group of hunters by tongue. The banded ant-eater of Australia has a grotesquely elongated muzzle by which it digs the ant hill and uses its still more elongated tongue to lick the ants up.

Insects are famous for the hard way they procure their food but amongst them, too, there are quite a few who adopt queer short cut tactics to that end. The silver-fish (*Lepisma*) who inhabits old books and uncared nooks and corners literally robs an ant of its food. There are some individuals amongst certain ants who have capacious stomach to store honey and distribute it to their needy brethren in times of scarcity. While one such ant is passing the honey-drop on to a fellow ant, the silver-fish, in wait, snatches the food and darts off at a high speed. Robbery of food is fairly cammon amongst hunting-wasps too. The wasp named *Pompilus* who sees a sister taking home a spider, follows her and when the arachnid is dropped to open the door of the nest, quickly grabs it and tries to flee. Beggary is another means by which some insects get their food. Certain beetles groom the legs of ants in exchange for food. There are some ants who are ranchers. They tame insects called aphids who suck plant juice and pass it out as partially digested sweet 'honey-dew' when tapped by the ant's feelers. There is yet another group of ants which employ other ants, the slave-ants, to procure food for them. Such is there dependence on these slaves that they would rather starve to death than find out their own food, if they fail to capture slaves. The larva of an insect (*Myrmeleoninae*) or ant-lion, as it is popularly called, has an interesting device to capture its game. It prepares a pit in the sand and sits motionless at its bottom with its enormous jaws widened. Should an unwary insect walk over the edge of the pit, it either slips down the sloping side of the pit or is brought down by throwing sand by the larva, killed and sucked. The food-capturing device of spiders are well-known. But not all spiders adopt the same method. The spider named *Scytodes* of S. England captures its game by spitting gum over its prey. It

quietly approaches a sitting fly, sits motionless for a moment and then all of a sudden the fly finds itself under a shower of sticky threads. The spider strolls wearily to it and puts it to death. The well-known British garden spider *Aranea* prepares an orb-web which is different from other common spider webs in having its spiral-threads extremely sticky and spoke-threads non-sticky. The spider is careful to tread only the non-sticky web-spokes to reach its glued up prey.
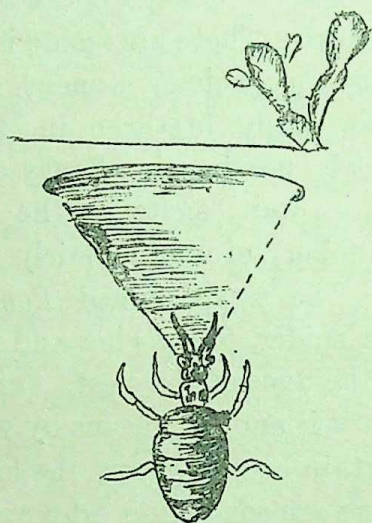
Fig. 6. The 'ant lion' awaiting the helpless descend of its prey.

The problem of capturing food becomes more difficult for those animals who have lost the power of locomotion. Because in their case, the food has to come to them instead of they going to the food. Nevertheless, such animals have successfully adapted themselves to their handicapped state. One such animal, *Chaetopterus*, a member of the earthworm family, burrows in a tube made in the muddy sand of the sea-shore. To produce the current in water, it keeps moving the fan-like expansions of the sides of its body. The current thus produced enters its burrow at one end and leaves by the other, the animal retaining the minute food-particles from the current. Sponges are another class of sedentary animals but they stay fixed on rocks submerged on sea-shore. Their body is perforated by a large number of pores (*ostia*) through which

the food carrying current enters the animals capacious body cavity. The latter is lined by millions of constantly waving 'whip hairs' (flagella) which drive the water out through a large outlet (osculum) giving entry to fresh current. The food-particles are retained within the body during this process. Whatever method the animals employ to get their food, there is always left some amount of uncertainty in their success. But there are some animals who have tried to do away even with that uncertainty by making special provisions of a ready supply of food. The giant clams (one clam may make a meal for six men and so require enormous quantity of food to sustain itself), for instance, offers in its body an excellent breeding-ground for microscopic plants on which it feeds, so that the monster has always a reserve on the premises, apart from what it sweeps into its interior in the ordinary course of feeding. The minute coelenterate, ***Hydra*** has gone a step further by harbouring small plants called *Zoochlorellae* within its body, who manufacture food for the animal instead of themselves becoming its food.

BRAHMAN IN ADVAITA PHILOSOPHY

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Advaita-Vedānta is an absolutistic system. It holds that *Brahman* (the absolute) is the sole reality. All that is, is verily *Brahman*, nothing else exists. The philosophy of Advaita can be explained in one sentence which runs as follows—"ब्रह्म सत्यं जगन्मिथ्या जीवो ब्रह्मैव नापरः'. It means that only *Brahman* is real, the world is an *appearance* and even the individual self is *Brahman* not other than it. The term *Brahman* literally means 'that which grows'. Advaita Vedānta is a system based on the *Brahmasūtras*, the *Upaniṣads* and the *Gītā* for its philosophical treatment. It takes this important term '*Brahman*' from the *Upaniṣads*. They also describe *Brahman* in many ways, e. g. सदेव सोम्येदमग्रमासीत् (*Chāndogya* 6. 21); एकमेवाऽद्वितीयम् (*Bṛhadāraṇyaka* 2. 5. 19); अयमात्मा ब्रह्म (*Bṛh.* 2. 5. 14); तत्त्वमसि (*Chāndogya* 6. 8. 7) and अहं ब्रह्मास्मि (*Bṛh.* 2. 5. 19).

Scripture is the main source of *Brahman's* knowledge. The third aphorism of the *Brahmasūtras* of Bādarāyaṇa clearly states this fact. Supra-sensible objects can not be perceived through ordinary means of perception. They can not be established by the ordinary *pramāṇas* such as perception and inference etc. Scripture (word) is the only avenue of knowledge for them. *Brahman* is such an object. So what we know about it is not based on reasoning but on the Scriptures.

The *Upaniṣad* teach diverse doctrines at different places and sometimes one doctrine stands opposed to another. Descriptions of *Brahman*, too, are found scattered here and there in an unsystematised form. In the *Brahmasūtra*, the author made an attempt to systematise their teaching and stated them in the aphorisms. These aphorisms deal with *Brahman* fully enough. The very first sūtra of the *Brahmasūtras* begins with an enquiry into the nature of *Brahman*. Commenting upon

this, the great Śaṅkarācārya raised the issue of *Karma* and *Jñāna*. Here and elsewhere also he fights a long and interminable battle against *Samuccayavāda*, the doctrine of the union of knowledge and action. According to the upholders of this latter doctrine, both knowledge and action are necessary for liberation and nitya-naimittika duties are to be performed even by those who have already been liberated in this life.

Śaṅkara does not admit *Karma* to be the means of the realisation of *Brahman*. He says that *Karma* is done to attain something or to abstain from something. The results of Karma are temporary where as Brahman-realisation is not something to be attained temporarily. In fact, *Brahman* is our very *Self*. We have to go nowhere. We have to realise it only by means of knowledge. If a prince, kidnapped by highwaymen, is told that he is a prince and not a robber, then the prince does not get something new. Only his ignorance concerning his real nature is removed. In the same way one can realise the *unity* of Brahman and the Self by learning the *Upaniṣadic* formula, '*That Thou Art*'. A question may be raised here as to how can words, which are nothing but symbols, give us direct knowledge; moreover, these Scriptures and their statements belong to *Avidyā*. The answer is that when the object of knowledge is immediate, even words can give direct knowledge. In the famous episode of 'the tenth man' the man realises immediately his *tenth* position after hearing from some one that he is the tenth.

Some thinkers have opined that though *Karma* is not the direct means of Brahman-realisation, it is helpful in it. So, sacrifices and other duties are to be performed without fail. Śaṅkara says that a seeker after *Brahman* need not do preliminary duties. If he does, there is no objection. But there are four conditions which a *jijñāsu* must fulfil. These conditions being fulfilled, even a Śūdra can realise *Brahman*. These conditions are technically called साधनचतुष्टय in this system. It is fourfold discipline which comprises (i) *nityānitya-vastu-viveka*, the discrimination of things permanent and transitory; (ii) *ihāmutra-phalabhogavirāga*, non-attachment to rewards of actions,

earthly and heavenly; (iii) *śamadamādi-sādhanasampat*, disciplines beginning with śama, dama, uparati, titikṣā, samādhāna and śraddhā; and (iv) *mumukṣutvam*, desire for liberation.

After fulfilling these conditions one can see the *Reality* (Self). But this seeing is also not the ordinary seeing in which we open the eyes and see things. It is rather closed-eye-seeing. Only *seer* can see. To be worthy of seer we have to climb three steps of श्रवण,मनन and निदिध्यासन. In the Bṛhadāraṇyaka, sage Yājñavalkya says to his wife Maitreyī—आत्मा वाऽरे द्रष्टव्यः श्रोतव्यो मन्तव्यः निदिध्यासितव्यः ।४।५।६।। First we have to hear the *Great Sentences* like *That thau art* from the mouth of the teacher or from the pages of the *Scripture*. Then we must ponder over what has been heard. Next comes the final stage of contemplation. Then only the self or *Brahman* can be seen. The *Upaniṣads*, the *Brahmasūtras* and the Gītā are the three source-books by which one can be acquinted with the descriptions of *Brahman* to be heard as the first stage of 'seeing'.

The *second* aphorism defines *Brahman*. Before knowing that definition let us know what are the types of definition and whether *Brahman* can be defined at all. Anything may be defined in two ways. We may state its *essential* nature or we may distinguish it from the rest by mentioning its *accidental* attributes. A house may be defined in terms of its essential or accidental character. That is the essential nature of a thing which is present in that thing so long as it lasts and distinguishes it from the rest (स्वरूपं सद् व्यावर्त्तकं स्वरूप लक्षणम्). And that is the qualification per accidence of a thing which remains in it only for sometime and distinguishes it from other things (कदाचित्कत्वे सति व्यावर्त्तकं तटस्थ लक्षणम्). The latter characteristic does not constitute the reality, it merely *indicates* it. Examples are there to explain it, e. g. शाखाचन्द्र-न्याय. To show the moon to the child we say, 'Look here ! the moon is sitting on the branch of the tree'. Really speaking, the moon is actually not sitting on the branch, it is in the sky far away. But because it is baby-moon, the child can not see it directly. When he looks towards the branches of the tree, then he is asked to look in the sky and he atonce sees the moon. Here

the branches are not constituting the part of that moon, they merely indicate. Similar is the case when a house is distinguished by a crow sitting on the top of it, which flies away after some time.

Though *Brahman* is anirvacanīya and avāṅgmanasgocara, Advaita-Vedānta defines it in both the ways stated above. Though the definitions may not apply absolutely to *Brahman*, at least they distinguish *Brahman* in such a way as it is intelligible to human mind. Even the *Scripture* distinguishes it by declaring 'नेति नेति', not this, not that. So there can be no definition of *Brahman*. The causality of the world is the qualification *per accidens* of Brahman. The second sūtra of the *Brahmasūtras* says that *Brahman* is that from where this world originates etc. (जन्माद्यस्य यतः). *Brahman* is the cause (material as well as efficient) of the origin, sustenance and cessation of the world (यतो वा इमानि भतानि जायन्ते, येन जातानि जीवन्ति, यत्प्रयन्त्यभिसंविशन्ति, तद् ब्रह्म। "तैत्तिरीय उप० ३।१।१ ।।) The Scripture defines the essential nature of that Supreme Reality as *Saccidānanda*, consisting of *Being*, *Intelligence* and *Bliss* (See *Taittirīya Up.* 2. 1. 1. and 3. 6. 1.). The threefold of nature of *Brahman* given by the Scripture is essential to It because it *constitutes* Its *essence* and serves to distinguish It from the *nāmarūptā maka* world which is *unreal*, *non-intelligent* and of *miserable* nature (अनृत, जड़, दुःखात्मकम्) which is contradictory to *Brahman*.

Of the two definitions, the *taṭastha* must necessarily come first in the order of our discovery of *Brahman*. In the Advaita, cause is not the changing stuff but the unmodified ground (अधिष्ठान) of the *appearances*. As in the rope-snake example, the rope is the ground which never changes, and on which the snake appears, so in the case of *Brahman*, it remains unmodified when the world appears on it. The world is not a modification (परिणाम) of *Brahman* but an illusory appearance (विवर्त्त) which is mistaken for It. The rope is the cause of snake in the sense that, but for it, the snake can not appear. Rope does not create snake. But in a figurative sense rope *is* the case of snake; it sustains the snake and when it is known,

the snake disappears. The rope is not the cause in the Sāṁkhya-sense where cause is modified into effect. *Brahman* also is the cause of the world in the sense that but for It the world can not appear. *Brahman* is the *ground* of the world *appe-arance*. It is not affected by the appearances. Even सहस्र सर्प-धारा cannot undo the rope. When the appearances are removed then also *Brahman* remains the same as was before appearances or at the time of their appearance.

Brahman is the cause of the world in the negative sense rather than in the positive. He is not the cause in the sense in which the potter is the cause of the pot. *Brahman* need not be the cause. But if anyone is the cause of the world, it is *Brahman*. None else can be the cause because *Brahman* is the *sole reality*. In fact, only this cause is the real, nothing else is real (ब्रह्मसत्कारणवाद). Everything except this *Cause* is Appearance.

To maintain the transcendental nature of *Brahman* this *taṭastha lakṣaṇa* has been applied. If Brahman will necessarily and essentially be the cause of the world He will be dragged to this world and charged for cruelty and partiality which is seen in the world. But if *Brahman* were wholly transcendent, we can not assert or attain it. *Taṭastha lakṣaṇa* is the device by which we may reach *Brahman* without compromising with the world. The world indicates *Brahman*, it does not constitute It. *Taṭastha lakṣaṇa* is a bridge to cross the gulf between the *world* and the *Brahman* It satisfies the mark of a *lakṣaṇa* because it differetiates *Brahman* and the *world*, and at the same time it is *taṭastha* because it is not the constitutive part of *Brahman*.

Brahman is the *ground*, the *reality* and the very essence of the world. *Brahman* is not one real and the world another beside it. World is appearance and it can never be real. It can at most *appear* as real so long as the knowledge of *Brahman* does not dawn. But without negating the world (the appearance) we can not know the *Reality*. Real is reality of the false. False is falsity of the real. Without falsity we can

not know the real *as real.* If we could, there is no reason in pronouncing the world to be false. It may be different from *Brahman* but on that account it would not be false. For this reason, we find it hard to accept the generally accepted notion that we start with a criterion of reality as non-contradictory like that of Bradley. Even Bradley comes to know something about *Reality* after negating *appearance* in his famous work *Appearance and Reality.* The progression is from the appearance to the reality, from the false to the truth and not *vice versa*-'असतो मा सद्गमय, तमसो मा ज्योतिर्गमय, मृत्योर्माऽमृतं गमयेति ।'. There is no passage from the real to the unreal; nor is it required. Our natural attitude is to take anything that appears as real. This is an unconscious process. This is the first stage. Next comes the stage of disillusionment. Thirdly we become reflective and come to know the reality *behind* the appearance. All appearances, when examined, give way to reality. Appearances can not appear in void. They *contain* reality in their interior or they *steal* reality so to say. When they are arrested by the enquirer or expert, they tell everything about reality which we can not know otherwise. That is why Śaṅkarāchārya begins this *bhāṣya* on the *Brahmasūtras* with the consideration of illusion or ignorance. We cannot define *Brahman* except as the reality of the world (appearance), or as what the world is mistaken for.

Brahman is the underlying unity of all appearances. It is the common platform on which the manifold of *māyā* stages its drama. Even to appear as two there must be a common thing which unites or relates them. Without this common element the two things will be so unique and cut-off from each other that they will not be aware of their duality. They will be separate *monads* (closed isolated worlds). So, even to appear as two that common ground is necessarily required. It is all pervading essence of things. This is *Brahman.* This essence cannot appear. If it will appear it will cease to be the essence. We cannot see the foundation of a house. If we try to see it, the whole building will collapse and that foundation will not

remain *foundation*, it will be mere collection of some bricks. But it is known to all that it is the foundation on which the building is based. Similar is the case with *Brahman* also. We cannot see it as *Brahman* because by its very nature it is *unseen*. It is not an object made up of five gross elements so that the senses may be able to perceive. In fact, it is the seer, and not the seen, hearer and not the heard—न दृष्टेर्द्रष्टारं पश्येनं श्रुतेः श्रोतारं श्रृणुया न मतेर्मन्तारं मन्वीथा न विज्ञातेर्विज्ञातारं विजानीयाः। वृह. उप. ३।४।२.

It has been said that *Saccidānanda* is the *svarūpa lakṣaṇa* of Brahman. The definition is a non-relational definition. Here the definiendum and the definition coincide. The real is devoid of internal differentiations and external relations. *Being*, *Intelligence* and *Bliss* are neither parts of *Brahman* nor the properties. They constitute the very nature of *Brahman*, and not its attributes. Though they are not different from *Brahman*, they appear as if different. If the *taṭastha* represents the discursive or the *manana* stage, the svarūpa is the intuitive stage. In intuition essence and existence coincide. We have no subject-object distinction or quality-relation distinction there when intuitive stage arises. F. H. Bradley also speak of this stage as *feeling* which is devoid of distinctions.

The three terms of the definition, *sat*, *cit* and *ānanda*, are not synonymous. Although they all denote, not connote, one and the same reality or entity that is Brahman; the difference among them is not verbal. Each of them denotes *Brahman* differently. The thing excluded, or the mode of approach, is different in each case; *sat* excludes *asat; cit* excludes *matter*, and *ānanda* excludes *misery*. These terms are not concepts or predicates. It would be less of a mistake to take them denotatively as things or substances. Each is *sui generis*, a Self. Each is identical with *Brahman*, substantially, not conceptually.

A question may arise here as to why there are three only, not more, and why these three and not the other. This very question arises in the Sāṁkhya system where Prakṛti has three constituents,—*sattva*, *rajas* and *tamas*. By way of answering the

question it is suggested that *sat*, *cit* and *ānanda* stand for three functions of *Knowing*, *Willing* and *Feeling*. Spirit or Reality is knowledge. Spirit is will, and Spirit is Bliss. Each is *sui generis* and it is not to be confounded with the others. Their confusion makes room for illusion,and their distinction through reflective analysis is the spiritual discipline of philosophic insight. Being, intelligence and bliss are *equally* and *fully Brahman*. This does not mean a plurality of *Absolute*, as there is no conceptual distinction. All these denote one entity, though in diverse ways. *Brahman* is their inexplicable substantial unity or base.

In the system of Advaita Vedānta *Brahman* and *Self* are synonymous or identical. When the word *Brahman* is used, it is taken for '*Self*' also. *Brahman* is not something foreign to us. It is our very *Self*. All the four *Mahāvākyas* denote this. They identify *Brahman* with all the three persons used in language. '*I am Brahman*' identifies Brahman with the *first* person; '*That thau art*' identifies with the *second* person; and '*This Self is Brahman*' or '*Knowledge is Brahman*' identify Brahman with the *third* person. In this way whole of the world is *identified* with *Brahman*.

The problem that arises here is that how can this Self of 'I' and 'Thou' be Brahman. Individual is finite, limited, ignorant and suffering from birth and death. How can it be identical with *Brahman* which is infinite, unlimited and ever-free ? Advaita Vedānta solves this problem by saying that they are identical in *essence* and not in *appearance*. It introduces here जहदजहल्लक्षणा which means that the meaning of a sentence is known here by partly accepting and partly rejecting it. When we say 'सोऽयं देवदत्तः' we don't mean that Devadatta of present time wearing white shirt and pant and Devadatta of yesterday wearing coat and pant are *two*. Devadatta is the same whom we saw at *that* time and seeing him at *this* time. Devadatta is same in reality inspite of his different appearances. Likewise, in the sentence 'That Thou Art' the essence is one inspite of the *upādhis* of past and present. If we reject finitude

of 'Thou' and mediacy of 'That', and accept *sat* portion of both *That* and *Thou*, they become one. Sadānanda has put it very nicely in his *Vedānt-Sāra*. It reads as follows: तत्त्वमसीति वाक्यं तदर्थों वा परोक्षत्वापरोक्षत्वादिविशिष्टचैतन्यैकत्वलक्षणस्य वाक्यार्थस्यांशे विरोधाद्विरुद्धपरोक्षत्वा-परोक्षत्वादि विशिष्टत्वांशं परित्यज्याविरुद्धमखण्डचैतन्यमात्रं लक्षयतीति ॥ २७ ॥ Essentially both are one. The only difference is that *Brahman* is free from Avidyā and the individual self is not yet free. It has got this freedom potentially but has not realised still as if. So, when the Scripture speaks about the *Self* we must take that for *Brahman* also and *vice versa*. When it is said that the *Self* is to be *seen*, *heard*, *reflected* and *contemplated upon*, it implies to *Brahman* also with equal force.

After hearing, reflecting and contemplating we came to the fact that this *Self* is *Brahman*. When we know *Brahman* we *become Brahman* (becoming is here in figurative sense; in fact we *are* Brahman). The Śruti declares : ब्रह्मवेद ब्रह्मैव भवति (मुण्डक, ३. २. ९); क्षीयन्ते चास्य कर्माणि तस्मिन्दृष्टे परावरे (मुण्डक, २. २. ८); आनन्दं ब्रह्मणो विद्वान्नबिभेति कुतश्चन (तैत्ति० २.९); तत्र को मोहः को शोकः एकत्वमनुपश्यतः (ईश० ७); तरति शोकमात्मविद् (छान्दोग्य ७. १. ३).

The Upaniṣadic seers have tried to make this unintelligible *Brahman* intelligible to human mind by various illustrations. These illustrations are so unique and important in their approach that they become classical for *Advaita* System. The Māṇḍūkya Upaniṣad has illustrated *Brahman* by way of explaining four stages of human life uiz., *waking*, *dream*, *sleep* and the '*fourth*'. Particularly the dream state has been emphasized much and the implications derived from this state are very useful in the consideration of Advaita. Nowhere else in the history of the world-thought dream and deep sleep has been analysed in such an important and lucid way as in the Upaniṣads. Gradually through these states human being is directed to the fourth state which is the state of *Brahman*. In this way man easily understands the hard to swallow descriptions of *Brahman*. Let us see the exact text of the Māṇḍūkya Upaniṣad which describes these states 'Verily all this is *Brahman;* this *Self* is *Brahman*. This same self has four *fourths*. The first fourth is the *Vaiśvānara* 'common-to-all-men,'

i. e., universal, (active) in the waking state, cognitive outwardly, having seven limbs and nineteen mouths enjoying the gross. The second fourth is the *taijasa* 'brilliant,' (active) in the dreaming state, cognitive inwardly, having seven limbs and nineteen mouths, enjoying the subtle. That is the deep sleep in which one asleep desires no desire whatsoever, nor does he see any dream. The third fourth is *Prājña*, 'wise', He is in the sphere of deep sleep, and just unified, a cognitive mass, consisting of bliss and enjoying bliss having the mind as mouth. Not inwardly cognitive, not outwardly cognitive, not bothwise cognitive, not a cognition-mass, not cognitive, not non-cognitive, not seen, not to be dealt with, not graspable, having no distinctive marks, not thinkable, not to be defined, the consciousness of the one-ness of the self, the cessation of expression, quiescent, blissful, without a second (such) they think is the fourth. He is the *Self*. He is to be realised."

Like analysis of the four states *Brahman* is made understood by the "*theory of Sheaths*. In the *Taittirīya Upaniṣad* sage Bhṛgu goes to his father Varuṇa and questions regarding *Brahman*. After long penance he gradually comes to know that *Matter*, *Vital-Air*, *Mind* and *Intellect* are not *Brahman*. At last he comes to the conclusion that *Bliss* is *Brahman*. Under *Brahman* are the various classes of individual beings such as gods, demons, men and the lower animals. Even innate things are under *Him*. All are, indeed, one with *Brahman* essentially, but they appear distinct from *Him* in consequence of their *upādhis* or aggregates. These aggregates, in the ascending order of their subtlety, are the following five which are called *pañch-kośas* (five sheaths) :— (i) *annamaya-kośa*; (ii) *prāṇamaya kośa*; (iii) *manomaya kośa*; (iv) *Vijñāna-maya kośa* and (v) *ānandamaya kośa*. These aggregates are called sheaths, for they keep the real nature of the self hidden, just as the sheath enclosing a sword keeps it hidden. The Self identifies itself first with gross matter. But as gradually our discriminatory knowledge dawns, we come to know that ultimately *Bliss* is *Brahman*. Having known this, all fears

vanish. And then all our doubts are removed, the knot of heart is cut etc.—

भिद्यते हृदयग्रन्थिश्छिद्यन्ते सर्वं संशयाः ।
क्षीयन्ते चास्य कर्माणि तस्मिन्दृष्टे परावरे ।।मुण्डक, २. २. ८।।

To conclude, *Scripture* is the only source of the knowledge of *Brahman*. He cannot be known by other means of valid cognitions. *Brahman* has been defined in the Advaita system in two ways. The first definition is *taṭastha* which describes accidental nature of *Brahman* and the second is *svarūpa lakṣaṇa* which tells us about the real nature of *Brahman*. *Saccidānanda* is the highest concept that a human-brain can think regarding the nature of *Brahman*. Though *Brahman* is said to be the cause of the origin, preservance and destruction of the world, He is in fact *in active*. He is cause in the sense that no one else can be the cause of the world. It is due to *Avidyā* that we ascribe causality etc. to *Brahman*. When our ignorance is removed, we come to know that this world is mere appearance and *Brahman* is the only *Reality*. This *Self* and *Brahman* both are essentially *one* and realisation of this unity is another name for *Liberation*. But this realisation can not be possible all of a sudden at a stroke. It is a gradual process and subject to discipline. Advaita-Vedānta assures that everyone can realise this unity and realisation is possible here and now. This is the most optimistic attitude of Indian Philosophical thought.

PERSONNEL MANAGEMENT AND ITS PRESENT POSITION IN INDIA

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Personnel management means the governance of human individual working under one management in more or less related occupations. An eminent author has described personnel management as—"the planning, supervision, direction and co-ordination of those activities of an organisation which contribute to realising the defined purpose of that organisation with a minimum human effort and friction, with an animating spirit of co-operation and with proper regard for well-being of all members of the organisation." Personnel management is an "advisory service." It is the application of a type of professional guidance to the methods used and the purposes sought through the activities of men and women in employment both as individuals and as working groups. To a degree, it is an expert service. For that reason, it carried no direct or obvious authority and most of its responsibilities are delegated. Its effects are produced by line management, that is, by the managers and supervisors who bear direct responsibility for the methods of operation used in the business.[1]

Personnel Management studies the art and science of managing personnel. The term personnel refers to men and women engaged in some productive occupation. Thus three elements are essential to form properly a 'personnel'—(1) human beings, (ii) related occupations, and (iii) one management. According to Dr. W. Ellesion Chalmeres[2], personnel management is a method of improving industrial relations, encouraged by mangement, to direct labour to increase production, and productivity and efficiency of the industry. Dr. Moorty

[1] Personnel Management, Principles and Practice by C. H. Northcott.
[2] Prof. of Economics, University of Illinois, U.S.A., Lecture delivered on 31-1-1963. B.H.U.

has gone one step further and given three broad heads to summarise the functions of personnel department, i. e. (a) recruiting the employees, (b) retaining the employees, and (c) retiring the employees. These three main decisions are not only closely related to one another but one leads to the other. They may be held to be logically connected with one another.[1]

Recruitment, as is known, is a method to secure a proper employee for a job. Therefore, on the type of person secured for the job depends, to a great extent, on production, morals, industrial relation, public relations, etc. This area of recruitment consists of functions (personnel management) related to job, knowledge, sources of labour supply, methods of contacting or getting at sources of labour-supply, application blank, interviews, tests, selection, placement, induction, confirmation, etc. Management will have to adopt certain methods like interviews, psychological tests, etc., before they can select a man. In some of the advanced factories and mills, certain tests like leadership test, expression test, and proficiency test, are organised before making selection. (Appendix I).

The next problem which the personnel management faces is of retaining the employees in the firm or industry. Merely the promise of promotion or increasing wages does not help in retaining an employee. In this dynamic world, it has been realised that a man needs careful handling, while channelising his enthusiasm for the smooth running of the factory or plant. It needs employee maintenance policy and practice which will keep the worker "punctual, cheerful and co-operative."[2] Methods needed for retaining the employees can be summed up as follows :

(a) induction, (b) training programmes in the industry, (c) job assignment and work load, (d) supervision, (e) mainte-

[1] Aspects of Labour Welfare and Management by Dr. M.V. Moorty, p. 75.

[2] An Approach to Personnel Management by Dr. M. V. Moorty, p. 77.

nance of discipline and morale, (f) personnel evaluation or merit rating, (g) wage administration, (h) welfare services, (i) counselling services, (j) health and safety precautions, (k) promotion and transfers, (1) communication and joint consultations, (m) encouragement of collective bargaining and the idea of co-operation, (n) maintenance of works committees and grievance procedures, (o) statistics and research and (p) miscellaneous functions if any.

These functions have been further illustrated in Appendix No. 2. In addition to the above mentioned functions, knowledge of labour legislation, industrial-court and tribunal awards, and of procedural details and confirmity to them becomes the duty of personnel manager. The activities connected with collective bargaining bring labour and management together and enthuse the spirit of co-operation.

The last function is termed 'retiring functions'. It is noticed that workers or the personnel have to roam about the streets when unemployed due to lock-outs, or superannuation scheme, or rationalisation scheme, or any such action taken by the management. It is only due to lack of future planning. The next question is—who is to do this planning ? Obviously, the welfare state or management which has employed the personnel. Management, in collaboration with State, has to plan and then the management's duty is to make the necessary provisions to implement the schemes. State should also help wherever the need be. It is said that the dynamic world has converted man into machine, but can a man really be converted into a machine. He is a thinking and feeling soul and not a heap of scrap iron, which may be thrown and discarded at the wish of any particular person. The management will have to take proper step of retirement, i.e. (1) giving proper notice, (2) payment of pension and (3) making provision for provident fund and gratuity (in case of disablement payment of compensation, etc.) (Appendix 3).

In brief, all the three basic functions, i.e. of recruitment, retainment can be termed as the backbone of personnel

management. Keeping these functions in mind it will be easy, for us to assess the need of personnel management in India.

Need of Personnel Management

It is now clear from the above study of these functions of personnel management that it is an important instrument in the hands of industrialists or management to tackle the man-power employed in their concern. In India most of the workers are uneducated and are not yet organised into strong union organisations capable of entering into collective bargaining. They are liable to be misled and do harm to both—to themselves and to the industry. On the other hand, the management's outlook is not so advanced and they seldom show broad-mindedness in tackling issues. In other words, industrialist in India "do not give any importance to the new discipline, which aims to build largely on motives of group approval, individual creativeness and growth, but still hold the line of old discipline which supposed to do' as we were told. "Theres not to reason why, theres but to do and die."[1] This state of affairs is found in the majority of industries. Their management believes in constant supervision of labour, to maintain order and faithful implementation of work. How long will this state of affairs last ? Particularly, when we are independent and the country is rapidly advancing in the field of industrialisation and there is a general awakening. Education, training schemes, trade and commerce etc, are all at a rapid pace. Labour and management cannot any more remain just spectators. They have to play a vital role. Neither labour nor management can progress unless both agree to march ahead hand in hand. Then only can they climb to prosperity and build up a sound economy. They have to understand each other.

Some lessons have to be learnt from the independent countries of the World Govt, of course, with due care, and caution. Suitable schemes have to be implemented so that

[1] A Constructive Discipliue by OrdWay Tead; Readings in Personnel Mangement—Pigors Myesr and Malum Pp: 383 to 388:

harmony may prevail in the industries. Management can take certain steps, like opening of personnel departments, and entrusting it to tackle labour issues and give opportunity for the betterment of employees. It will change the complex of the industries. Trained personnel will take the place of untrained, and the uneducated will be replaced by educated.

If the importance of personnel administration/management is not realised by private management, then the State, being a welfare State, may be compelled to impose certain laws, to appoint such persons who can represent the case of labour with management and management with labour, which is basically a wrong policy for the development of good industrial relations.

In India, the State came forward with legislation for the appointment of Labour Welfare Officers by managements. Later on a few managements have shown their willingness to develop the personnel department. Let us at this point consider briefly the history of the growth of personnel management in India.

Positron of Personel Management in Indian Industries

From the study of previous records, it has been revealed that before 1931, functionalised personnel administration was completely absent in the majority of Indian industries. Only in 1931, the Royal Commission on Indian Labour drew attention towards the need of appointing labour officers/labour welfare officers in Indian industries. Later on, the managements in certain mills appointed labour welfare officers who started working in collaboration with Government welfare officers. This institution rapidly developed in recent years when rules were framed under the Factories Act of 1948 which made it compulsory for an industrial concern employing five hundred or more employees to appoint a requisite number of welfare officers possessing requisite qualification. The status and duties of the welfare officers to be appointed under the above Act were laid down under the Welfare Officers (recruitment and conditions of services Rules 1952). Under the Act,

a welfare officer is expected to perform the duties as enumerated in the list under Rule 7 of the Welfare Officers (recruitment and conditions of service) Rules 1952. The list includes the functions which embrace the functions of Personnel Administration, Industrial Relations as well as Labour Welfare. The duties, will be helping the employer in formulation of labour policies, encouraging joint consultation of labour, regulating leave with wages and framing the policies and programmes in respect of training, promotion, transfer and communication of information regarding company to the workers.

At first the representatives of labour looked upon the appointment of labour officers with indifference, if not suspicion. On the other hand "compulsion in appointment of welfare officers, the conditions of their service, nature of their duties and some voice given to the commission of labour against unjust discharge or dismissal of such officers, all these have made labour welfare officers a third force in the industry, occupying a sort of middle ground between labour and management."[1] Mr. C. A. Myers has collected views on this ideology of 'third force concept' and has reached the conclusion that there is a lot of ambiguity in the employer and employee's good relationship. According to him, "Not more than one percent of the employers in India understand the relationship between good labour relations and higher produttion." Moreover, "some managements use labour officers to carry out decisions which have already been made and give them no leeway to negotiate or mediate." "They are expected to legalise illegal actions or get out." This 'third force' concept prevailed at the 1956 symposium, conducted by a branch of the Indian Institute of Personnel Mangement. The participants concluded that collective bargaining should be the tool to settle disputes and that "the role of the personnel officers in this connection should be that of a conciliator."

Personnel investigation, as conducted during 1961-62, tells a different story. The observation can be summarised as follows :—

[1] Charles A. Myers: Industrial Relations in India, p. 210.

1. Labour officers/labour walfare officer is seldom consulted at the time of formulation of policy or at the time of taking major decisions.

2. The managing agents or managing directors or top executives, it seems are not yet convinced of the need for functionalisation of personnel management. They consider labour welfare officers as expert in Labour Laws rather than a part of the team of personnel management. This was particularly noticed in cotton textile industries (old factories), some group of factories (including coal mines) in Bihar, and in the majority of Calcutta jute mills. It was expected that labour officers have to assume importance only in case of strike of bad industrial relations prevailing in the factory. It is regarded that they have intimate knowledge of labour laws and they know the tact of negotiating with labour representatives.

(3) Next to it, it has been observed, particularly in older factories, that job-analysis or merit rating schemes have not been encouraged. A labour welfare officer is expected to become an intermediary, to bring the labour at the door of the factory without any prominent voice in their selection. He has nothing to do with any scientific or up-to-date systems of personnel management. Generally the voice of departmental staff prevails over them.

(4) Again, managing agents, managing directors or executives take direct interest in case of development programmes of training, joint consultations or communications of work etc. without paying any heed to the labour welfare officers. All these major shortcomings allow us to draw the conclusion that personnel management has not gained any importance in the industries, particularly in cotton, jute, cement, etc. This view was further strengthened, when during a recent visit to Rohtas Industries, it was observed that the condition and importance of labour officers and welfare officers was only to maintain law and order inside the mill. One officer has remarked, "We still live in the semi-feudal

state of affairs". Such existing state of affairs fail to give fillip to the development of personnel management ideas on a scientific line. The old bureaucratic ideas still prevail in the minds of executives and directors. It has been observed in some of the groups like Birla Brothers, etc., where a trained and efficient outsider (who is not a relative or a man of management) can not hope for any direct appointment and if somehow he is appointed, he is not allowed to take any interest in the management policies etc.

It does not mean that personnel management is not getting support from the industrialstis. A number of industries is growing under upblic sector where the Government aims to establish a good personnel management department. Even in private sector, some of the big industrialists like Tatas and others foreign concerns, are progressive in their outlook and are trying to implement such schemes as community development, welfare, and a well organised network of personnel management.

(5) In case of wage and salary administration, generally the matter is decided at the factory level. Labour officers/welfare officers donot interfere, nor are they allowed to interfere in the wage administration policy. What to be given or how it will be distributed is the job of cost-accountant, who decides the issues in consultation with the chief executives. Labour officers are consulted only in case where schemes like rationalisation, retrenchment, etc. are taken into consideration. It has been observed in some of the mills of Northern India that the labour officer generally has to implement the directives of the management in such cases of wage adjustments, etc. If we call these people only legal consultants of the management, it will not be out of place.

(6) Labour officers/labour welfare officers have been assigned the functions of handling grievances, complatints etc. lodged by workers or trade unions. They try to use their personal influence to settle such dispute. But it is noticed that, they succeed only to settle minor disputes. For major issues, the

services of conciliators, labour courts or arbitration has to be utilised. Dr. Thaker in his book 'Labour Problem of Textile Industry' has observed, "In the absence of proper understanding of the importance of enlightened personnel management, the departmental staff also treats labour/welfare officers as legal advisers rather than experts in personnel management. On account of these reasons sometimes when labour/welfare officers try to settle the grievances of workers, departmental staff feels that labour office is unduly interfering with their affairs."[1]

Reviewing the condition and the significance of labour officers, it can be said that we need particularly for industries organised in the latter part of 20th century, a well-planned personnel management policy and due provision may be made to organise their men on the laid down policy.

It has been observed that management is realising the importance of personnel department, but on the whole it has been observed, particularly in private sector, as a tendency to undermine the importance of personnel section.

Observation in Selected Industries

Tata Iron & Steel Co. Ltd.

In TISCO, the founders of the company had always put first in every one of their enterprises, the welfare, safety and happiness of their employees. As early as 1916 a Committee presided over by the famous labour leader, Sidney Webb, prepared a plan for employees and community services on scientific lines. Now TISCO bears almost all the burden of organising, managing and financing welfare services in the town without any aid from Government.

Having adopted the philosophy of labour management relation, Mr. J. R. D. Tata formulated three main requirements of industrial development in 1956. The first, he said, was to provide for the basic material needs of the workers, good working conditions, adequate wages, job security, retirement

[1] p. 82.

benefits, housing, medical care and educational facilities, for the worker and his family. The second is to provide, within and outside the factory, the means of satisfying the more intangible but equally strong human desire for self-expression and fulfilment and other urges characteristic of human life in the group, the recognition of individual work, appointments for promotion and leadership, the feeling that one "belongs". It is important to remove the feeling of its isolation, the remoteness of individual work, and the lack of a personnel-stake in the enterprise.

An important factor in creating these relationships was the work of personnel department. This department was created in 1943 with the aim of creating mutual trust and friendly understanding between workers and management and maintain a personal touch between them. This department has been divided into different sections. The important ones are—(1) community development and social welfare, (2) permanent joint rates committee, (3) research and investigations, (4) employment, (5) welfare, (6) accident preventions, (7) works committee, (8) canteens, (9) joint consultations, (10) health, etc. The first four are directly controlled by C. P. M. while others are under the Dy. C. P. M.

The most important step, I feel for better understanding and work inside the works, is the working of three tire organisations, i. e.

(i) Joint Departmental Councils, at the departmental level in the works;

(ii) The Joint Works Councils and Joint Town Councils at the level of the Works and the town; and

(iii) The Joint Consultative Council of Management of the top level covering the entire organisation of Jamshedpur.

These organisations are working for the general benfit of the workers as well as for enterprise. Some objections are raised by the workers, and call these as a window dressing of the reality, but opinion differ. At least here is a machinery which can mobilise and train the labour. The result, good or

bad, depends upon the way labour and management handle it. To support this case, I had an opportunity to attend the annual meeting of J. D. C. Council of Electrical Department (Power). In this meeting two things struck me most, i. e. (i) the informal discussion between labour and management and (ii) rewards to the efficient workers, who have given good suggestions or helped their fellow workers by donating their blood.

Indian Aluminium Co. LTD.

The organisation of personnel department in I. A. Co. is not the same as in TISCO. There exists a difference in the pattern of organisation. Here although proper systems of communication, grievance procedure, and job evaluation have been organised, but due to spreadover of this industry in different areas of the country, a co-ordinated system of P. M. has not been developed. Methods of recruitment and placements, which have been adopted by this industry can be appreciated. They judge a new entrant, by appearance, scholastic industrial and business experience, intelligence (tests), initiative, leadership, keenness and industry, co-operativeness, dependability and final assessment. In addition to it not much have been done as compared to TISCO or any other organised industry. On the whole industrial relation is better.

Bata Shoe Co. (Private) LTD.

Coming to Bata Shoe Co. (Private) Ltd., it has been noticed that in this company workers as compared to other industries are better managed, better paid, and enjoying better working conditions, etc. But, personnel department needs more scientific orientation. Simply by looking after the legal requirements, a welfare or labour officer should not be undertaken to keep the efficiency and to keep down the short notice strike or sympathetic out-bursts etc.

The illustrations of above three important Indian industries help us to catch the nerves of the progress of personnel management in rest of other industries. We can summarise

our remarks regarding the progress of the personnel management in Indian industries. They are as follows :

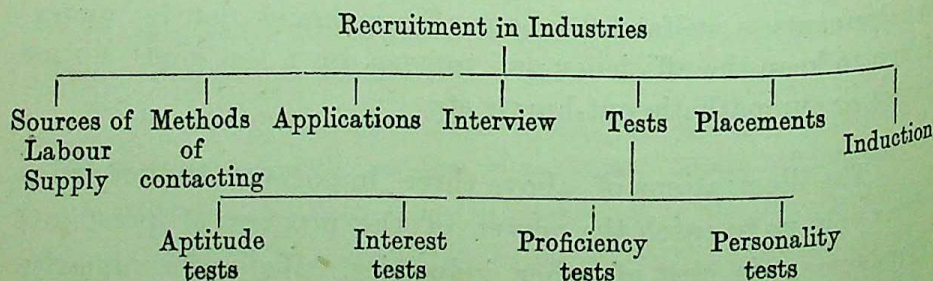
(1) The attitude of management towards workers are still hostile, particulary on the question of labour participation in management.

(2) There is a general tendency to transfer responsibility to those below particularly from administrative ranks to the supervisory cadre without delegating the authority.

(3) "A talented worker can achieve excellent results if his good work is recognised." In India we still feel that management fails to give their due attention to this fact.

(4) The task of personnel management is to look after the welfare activities too. But it has been noticed that industrialists shut their eyes to see the effect of accidents, socio-economic conditions and lack of proper nutrition etc. on productivity, efficiency and production, respectively.

From the above four factors we can say that, to deal with the problem of personnel management, good industrial relations must be established to attain the objectives of the industry. Proper selection, training, induction, wage-administration etc. have to be taken into consideration. All these can only be achieved if nepotism, favouritism, corruption is replaced by integrity, honesty and progressive attitude of employers.

APPENDIX—1

APPENDIX—2

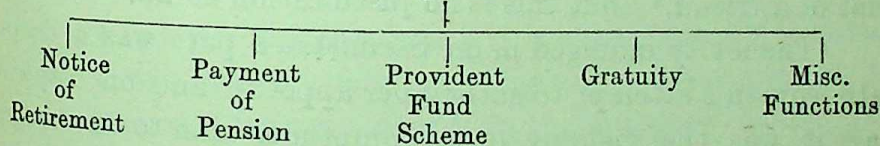
Retaining policies & practices in an Advanced Manufacturing Establishment

- Welfare Service
  - Health
  - Safety Precautions
  - Working conditions
  - Outside work
- Counselling
- Supervision
- Wage Administration
- Job assignment & work-load
  - Personnel evaluation or merit rating
  - Job evaluation
  - Job designation
- Communication and training
  - Induction
  - Training programmes
  - Joint consultation
- Research & Statistics
- Industrial Relations
  - Encouragement of collective bargaining & the idea of co-operation
  - Maintenance of work committees & grievance procedure.
  - Misc. functions

Note:—These functions can be taken by industrialists according to their convenience. No rigid sequence can be laid down.

APPENDIX—3

Retiring Function

- Notice of Retirement
- Payment of Pension
- Provident Fund Scheme
- Gratuity
- Misc. Functions

THE INSTITUTION OF MARRIAGE IN THE MATSYAPURANA

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The institution of marriage according to the Matsyapurāṇa originated with Brahmā, the Creator, who created a woman and subsequently married her.[1] It was, however, finally established in the world by Svāyambhuva Manu, the son of Brahmā.[2] A state of promiscuity in general did not prevail in the days of the Matsyapurāṇa. But stray cases are not altogether absent.

For instance, Śarmiṣṭhā's union with Yayāti is not approved of by the Dharmaśāstras. Her only plea for taking Yayāti as her husband is that she being a slave had no separate ownership over anything and therefore she must have joint ownership with Devayānī over Yayāti.[3] The excuse appears to be that there is no difference between one's own husband and that of a friend,[4] but this is no justification at all.

The levity indulged in on Śarmiṣṭhā's part was a desperate woman's attempt to satisfy her appetite and on Yayāti's part it was the yielding of a voluptuous man to an inviting virgin who had no other just and normal way left to her for starting a regular home life. Had it been Gāndharva marriage it would have been mentioned as such. Even if it was a Gāndharva marriage its validity was not strong, as it was not confirmed by the marriage ritual. Not only the Dharmaśāstras but also the Kāmasūtra, which is a work on the erotic scence, enjoins that a secret marriage must be confirmed before fire.[5] But this is not abided by here.

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1 M.P. III, 43-44.

2 Ibid, XXXI, 27.

3 M.P. XXXI, 27.

4 Ibid, 19.

5 Kāmusūtra VI, 38; Devala-smṛti quoted by Kulluka on Manu, VIII, 226; Evolution of Hindu Morals, 25.

Again Soma of the Purāṇa seduced and abducted Tārā, the wife of Bṛhaspati to whom she was restored after a bloody war. Later on Tārā gave birth to a son begotten by Soma. According to the Mahābhārata and some Purāṇas a deceased brother's wife was considered to be the property of the brother-in-law.[2] There is a case in our Purāṇa in which a widow was all of a sudden approached by the brother-in-law without any kind of marriage ritual. This, of course, has not been considered to be a good practice.

There is only one reference to a loathsome practice in the society known as 'godharma'. As animals satisfy all kinds of appetite by the object which is most handy, in the like manner, the followers of 'godharma' also had no scruple in satisfying any kind of theirs appetite. An instance of this is given in the Matsyapurāṇa but the man got a good snubbing from the woman for it.[4]

The practice of 'niyoga' or levirate (in which a man was appointed to raise a male issue in the kṣetra or wife of somebody as his representative), of course, got some social recognition and the Dharmaśāstras laid down certain rules and regulations which were to be duly observed in its practice.

The reason for introducing it into the society is obvious. In the case of a man's failure to beget a son the ancient law-givers provided for sons other than the adopted ones, for the perpetuation of the family. Adopted sons were not looked upon with favour in ancient days and law-givers like Āpastamba though against the practice of 'niyoga' did not like adoption even.[5] But the society of the day shuddered at the idea of the discontinuance of the family line. Therefore the ancient law-givers could not help having recourse to 'niyoga' though they tried to raise its standard to a higher level and allowed its practice with strictest observation.

[1] M.P. XXIII, 29—XXIV, 2.

[2] Mbh., Anuśāsana, XII, 19 ; Agni, C LIV, 5-6.

[3] M.P. XLVIII, 33-41.

[4] Ibid, 50-56.

[5] Āpastamba-Dharmasūtra II, VI, 13, II ; Mbh. Anuśāsana, XLV, 18.

The Matsyapurāṇa refers to several cases of niyoga. The sage Dīrghatamā was appointed to raise issue in king Bali's wife.[2] Dhṛtarāṣṭra, Pāṇḍu etc. were born as the kṣetrajas (male issues raised in others' wives) of Vyāsa in the kṣetra of Vicitravīrya.[3] Pāṇḍu's wives also had sons by levirate.[4] The custom though detestable from the modern point of view demanded a very high degree of dispassionateness almost beyond the range of human comprehension and practice. Later on the extraordinary nature of training and high sense of discipline required for 'niyoga' gradually disappeared from the society and consequently the practice of 'niyoga' was strictly forbidden.[5]

The Matsyapurāṇa gives the derivation of the word 'vivāha' (marriage) from the root 'vah' (to spport) with the prefix 'vi' (duly).[6] The word suggests that after marriage the husband was expected to support the wife duly for the whole of her life. Really, in those days when women had no economic independence and could inherit no property 'supporting' had special significance to them. She could with all her children depend entirely upon her husband with a deep sense of security and assurance.

Marriage was regarded as unavoidable and the first and foremost in importance for the gṛhasthāśrama or a householder's life. The Vedas regard the bachelor as unfit to take up sacrifices.[7] The gṛhyasūtras begin with marriage because it is the origin of all domestic sacrifices. The maintenance of the sacred fire was the bounden duty of a house-holder's life and it was kindled at the time of marriage.[8] The Matsyapurāṇa mentions dāra (wife) and 'agnihotrasambandha' (act relating to the kindling and maintaining of the sacred fire) in the same breath, suggesting thereby that both are inseparably

1 Manusmṛti, IX, 59-60.
2 M.P. XLVIII, 50-60.
3 M.P,L. 46.
4 Ibid, 49-50.
5 History of Dharmaśāstra II, 603, 606; Position of Women in Hindu Civilisation, 175.
6 M.P. XXX, 34-35.
7 M.P. XXX, 34-35.
8 Pāraskaragṛhyasūtra, I, ii,

related to each other.[1] No sooner the marriage took place than a new life dawned on the couple who were initiated into 'agnihotra' and had to perform the requisite rites and duties,

Marriage according to the Indian ritual was a cultural necessity. It was not sex-slavery, though it was not complete self-denial too. It was a compromise of the call of duty and fulfilment of an emotional want. The enjoyment of a marital bliss in company with a loving wife and the care and foundlings of the sweet home were sought after even in the Vedic age. Man can not be complete nor can he be happy by himself alone. This feeling of loneliness urged even Brahmā to create a feminine form as his companion and he ultimately married her.[2] The wife was her husband's companion in religious practices and domestic affairs and even in the performance of penance in the third stage of life.[3] Such a partnership could according to the purāṇa be secured only by the sacrament of marriage.[4]

A woman after her marriage used to obliterate her own identity and get merged in the personality of her husband and the husband on his part could not get on without a wife. She was one of her hushand's possessions—a glorious possession.[5] The husband used to take complete charge not only of his wife's food and clothing but also of saving her honour[6] and meeting all her financial needs.[7] In the eye of law the wife was financially an insolvent and was therefore entitled to enjoy and make the best use of her husband's propety and wealth through her husband's tender care. The husband provided her even with piety.[8] Thus the man fulfilled all the wants of a wife. Therefore, in the fashion of the Rāmāyaṇa,[9] the Matsyapurāṅa declares that a husband's store is

[1] M.P. CXLV, 60.
[2] M.P. III, 43-44.
[3] M.P. LVIII, 20; XCIII, 59; LVIII, 23; CXXXI, 9-12; CXXXI, 12; CXXXIX, 22, LXI, 37.
[4] M.P. LX, 15.
[5] M.P. CXLII, 63.
[6] M.P. CXLVI, 77.
[7] M.P. CLIV, 165.
[8] Ibid.
[9] Rām., Ayodhyā, XL, 3; Brahmavaivarta, II, LVII, II.

limitless and he is the source of inexhaustible comfort and happiness to his wife.[1]

The wife in her turn concentrated her whole being on her husband. She took him to be the best resort of her life.[2] She was unflinchingly faithful and devoted to her husband throughout her life, be he poor and unfortunate.

Marriage being such a noble and ideal instituton, the day of marriage was sure to be observed as a memorable day every year.[4] The smṛtis recognised eight forms of marriages, namely, Brāhma, Daiva, Ārṣa, Prājāpatya, Āsura, Gāndharva, Rākṣasa and Paiśāca.[5] Some of these are recommended with approval and some are not, but all of them are legal marriages.

Of the forms of marriage—the Paiśāca (the most contemptible form of marriage in which the man fraudulently got possession of the person of the girl while she was sleeping or was excited and unconscious), Daiva (the form in which the girl was given away in marriage to the priest who officiated at a sacrifice) and Prājāpatya (though otherwise similar to the Brāhma form differed in this—the father gave away his daughter to the invited groom having made the groom and bride both enter into a contract that they would perform their civic and religious duties together) find no mention in the Purāṇa. The Rākṣasa (a form of marriage in which the girl was taken away as the booty of war) was the kind of Vidarbha's marriage in which the bridegroom married the girl seized by his father.[6] This type of marriage probably originated with the primitive warring tribes Rukmiṇī's marriage as we find in the Bhāgavata, Viṣṇu and Brahmavaivarta-Purāṇas was an instance of the Rākṣasa marriage, no doubt, but it was a modified form, because in it the captured woman was a willing party and no force was resorted to. The Matsyapurāṇa has only one single

[1] M.P. CCX, 18.

[2] M.P. CCX, 17; Viśvabhāratī Quarterly (July, 1925).

[3] M.P. CLIV, 165.

[4] M.P. LX. 15.

[5] Manusmṛti III, 21; Yājñavalkya-smṛti I, 58-61.

[6] M.P. XLIV, 36; Mbh., Ādi., CCXLV, 6; Position of Women in Hindu Civilisation, 37; Ṛgvedic Culture 105-106.

[7] M.P. XXIV, 29, 32.

instance of such a marriage as mentioned above. It seems though it was in vogue, it was not very popular. Urvaśī's union with Pururavā was Gāndharva in form[7], as it was not settled by the parents. The bride and the bridegroom arranged it between themselves, out of sensual inclination.

The Āsura form (in which the bride is purchased and then married) is mentioned only in theory and that, too, to condemn it. Giving away a girl in marriage was the ideal form of marriage. Therefore taking any price from the groom was not favoured at all. On the contrary, it was condemned.[1]

The Ārṣa marriage (which was current in the priestly class and in which the father gave away his daughter for a pair of kine) is mentioned only once.[2] This form also included some sort of give and take in a girl's marriage and therefore most probably was not very popular. Sāvitrī was given away without any contract to Satyavān who was invited to the marriage[3] and the same was the case with Umā's marriage. In Umā's marriage the groom was selected by the father of Umā and the groom and his party were invited to the marriage.[4] This form was the most widely recognised in the days of the Matsyapurāṇa.

In the age of the Matsyapurāṇa girls were given away in Brāhma marriages, after decorating them with ornaments. In the Brahmavaivartapurāṇa we find references to the dowry given to the bridegroom.[5] But the Matsyapurāṇa being of very ancient origin did not know this development. In those days of simplicity no body could entertain the idea that a family which was giving away a girl to the bridegroom and thereby going to be deprived of her services should give, over and above her, some dowry also. In the Matsyapurāṇa we find gods presenting some articles to Śiva on the occasion of

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[1] M.P. CC XXXVII, 21; Padma, Brahma-Kh. XXIV, 26; The Status of Women in Ancient India, 39-39.

[2] M.P. CVI, 8.

[3] M.P. CC VIII, 12.

[4] M.P. CLIV, 178; Position of Women in Hindu Civilisation, 47, 55.

[5] Brahmavaivarta XLV, 55-59; CVI, 3-6; CIX, 39-43.

his marriage, but these gods belonged to the party of the bridegroom himself.[1]

In the Brāhma marriage the decoration of the bride is made at day-break by the wives of the bride's relations.[2] The bride's home and neighbourhood are duly decorated on the occasion of the marriage. We are told that gates of gold were erected and on them decorations were made with precious stones. The thoroughfares of the city were painted with dyes. It was scented all over with perfumes. Large crowds of people, specially women, gathered to see the coming bridegroom and the procession following him.[3]

The Matsyapurāṇa presents a simple yet dignified picture of the procedure of the marriage ceremony. Some preliminary rites of marriage were performed by the married women very early in the morning.[4] The groom got himself decorated and set out for the bride's place on a vehicle and in procession with his people.[5] Before starting, the groom looked at the mirror.[6] Various musical instruments were played upon and auspicious songs were sung as the marriage procession went on.[7] Great personalities stood at the gate of the bride's house to receive the bridegroom.[8]

Fire was kindled as the witness of marriage and the pāṇigrahaṇa (the groom's taking the hand of the bride when she is given away by the father with the utterance of mantras) ceremony was solemnised with the mantras.[9] All the religious rites and practices were conducted by the priest and the father gave away his daughter to the groom.[10] Pāṇigrahaṇa which is as old as the Vedic age was a very essential part of the marriage.[11] When it is said that the groom took the bride's hand it is meant that the marriage was solemnised.[12]

[1] M.P., CLIV, 435-439.
[2] Ibid., 428.
[3] Ibid, 467-471.
[4] Ibid, 427-428.
[5] Ibid, 452.
[6] Ibid, 447.
[7] Ibid, 458-464.
[8] Ibid, 482.
[9] Ibid, 483-484; Position of Women in Hindu Civilisation, 55-57; Women in the Vedic Age, 15.
[10] M.P. 483-484.
[11] R.V., X, XVIII, 8; Mbh., Anuśāsana, XLIV, 55; Kādambarī, 294.
[12] M.P., CLIV, 423.

The Saptapadīgamana (the couple's going around the sacrificial fire) without which marriages are considered incomplete is not mentioned in the Purāṇa. Perhaps Pāṇigrahaṇa was the most important and valid feature of the marriage ceremony of the day. Oblation in the sacrificial fire at the time of the ceremony, however, is mentioned in the Matsyapurāṇa.[1]

The time for the celebration of marriage is rather peculiar with the Matsyapurāṇa. Instead at night, as is usual in some parts of modern India, it took place 'prātaḥ'[2], in the morning. This is a proof in support of the antiquity of the Purāṇa of its belonging to an age almost approaching the Vedic. In those days elaboration was not yet made on different items of the marriage ceremony, but as usual with many auspicious rites, it too was conducted in the morning. Later on perhaps, marriage at night became a regular practice.

The Padmapurāṇa, which occasionally borrows the contents of the Matsyapurāṇa verbatim, has curiously enough changed the word 'prātaḥ' for prītaḥ'[3], the rest of the construction remaining unchanged.

No instanec of child marriage is found in the Matsya purāṇa. Marriage after the attainment of puberty by the girl is definitely mentioned in the Purāṇa in the cases of Sāvitrī[4] and Devayānī.[5] Umā's age at the time of her marriage is not explicitly mentioned. But from her feeling of frustration, her strong resolve and carrying out her point in spite of the opposition of the mother, the elaborate nature of the austerities practised by her, the clever discussion that she had with seven sages and the consummation of her marriage just after the ceremony was over, it can be easily concluded that she was not a child then.[6]

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[1] Ibid, 484.
[2] Prātaste Saṃkarah Pāṇim eṣa putri grahiṣyati, Ibid, 423.
[3] Padma, Sṛṣṭi-Kh. XLV, 408.
[4] M.P. CCVIII, 12.
[5] M.P. XXV, 27.
[6] M.P. CLIV, 308-372.

We find a reference to child marrigge in our Purāṇa when it is said in a characteristic purāṇic style that the marriage of an eight year old girl yielded a great merit.[1] But there is no case of an actual performance of such marriage. At another place we find that a girl allowed to remain unmarried upto her twelfth, thirteenth or fourteenth year of age could make the choice of her husband.[2] Self-choice by a girl was not commended in that age but remaining unmarried upto the age mentioned above was an emergency in which self-choice was allowed. Here is a reference to child-marriage only in theory.

Generally there was no scope for divorce in the marriage of ancient India. Yet there are stray references of marriages after leaving allegiance to the husband under certain conditions. The Padmapurāṇa sanctions the remarriage of a girl of tender age provided her husband is dead, has deserted the girl or is suffering from an incurable desease.[3] The Agnipurāṇa also says the same.[4] Kauṭilya in his Arthaśāstra allows divorce as such when the husband and wife hate each other and are unable to pull on together.[5] But it is not sanctioned in the Matsyapurāṇa, on the contrary it provides for the punishment of a man who deserts his wife.[6] And there is an instance in the Purāṇa that even a father did not forgive his daughter who came to him leaving her husband.[7] There arose no question of separation until Death's cruel hand separated the couple.

It is already observed that widow-marriage was sanctioned by the Padmapurāṇa and Agnipurāṇa and the same is the case with the Parāśara and Nārada-Smṛtis.[8] Our Purāṇa, though it does not allow widow marriage has an indirect reference to it.[9] It allows a man to marry a widow provided he took nothing belonging to her.

1 M.P. CC VII, 40.
2 M.P. CC XXXVII, 128-129.
3 Padmapurāṇa, Pātāla-Kh., XCII 44-45.
4 Agni, CLIV, 5-6.
5 Arthaśāstra, 155.
6 M.P. CCXXVII, 150; Vaśiṣṭha-Dharmasūtra, XXVII, 2-3.
7 M.P. XI, 25.
8 Parāśara-Smṛti IV, 26; Nārada-Smṛri XII, 97.
9 M.P. CCXXVII, 130.

The Purana has struck a compromise—neither allowing a woman to indulge in inconstancy by dint of her good economic condition, not thrusting upon her unwanted rigour and forcing her to observe life-long continence while she with all heart was willing to settle to a home-life again. She could seek matrimonial alliance from a chivalrous man if she could get any and thus the destitute and poverty-stricken child-widows at least could get the needful protection and relief. Thus we find that widow-marriage was allowed in a rather modified form and within strict limit. But as usual with the Indian tradition widows generally did not marry for the second time.

A lot of restriction was observed in marriages. None could select any girl he liked for his marriage. Cousins were considered prohibited relations.[1] One could not marry a sagotra girl or a girl born in the same family stock. A teacher's daughter was like one's own sister and young men of refined taste declined to marry such girls.[2]

Inter-caste marriages were not commendable, but were allowed under certain restrictions. The anuloma marriage or marriage of a lower caste-girl with a higher caste groom was allowed in case she attained puberty and had herself selected the man. A girl in love with a higher caste man, therefore, was sanctioned to enter in matrimony with him but the case being reverse (i.e. a higher caste girl loving a lower caste man) the love was not allowed to culminate in marriage. On the contrary, the man and woman both were awarded capital punishment for this.[3] Even the sin of 'strīvadha' (killing a woman) was not incurred by killing her. Though thus forbidden pratiloma marriage or the marriage of the reverse kind were not only few but far between.[4] But all the same anuloma marriage continued to prevail in our society.

Provision for svayamvara (choice of the husband by the girl) has been made in the Purāṇa by saying that a girl not

[1] M.P. CCXXVII, 51, 150.
[2] M.P. XXVI, 18.
[3] M.P. CC XXVII, 131-132.
[4] M.P. XXX, 33 ; XX, 26.

married upto a certain age could make choice of her own. We find only one instance of such choice.[1]

There are many instances of poligamy in the Purāṇa. Of Dakṣa's sixty daughters—ten were given in marriage to Dharma, thirteen to Kaśyapa, twentyseven to the Moon-god, four to Ariṣṭanemi, two to the son of Bhṛgu, two to Kṛśāśva and the remaining two to the sons of Añgirasa.[2] Sāgara, Ajāmīḍha, Vivasvān, Pāḍu etc. had more than one wife.[3]

As usual with the Smṛti and Purāṇa works the Matsyapurāṇa declares that a girl is marred only once.[4] Any[5] body getting his daughter married for the second time was punished. Even a man playing false after his daughter's betrothal was considered to be a sinner.[6]

Thus we see poligamy, ensuring large families, was prevalent in our country but polyandry was not widely practised. The Matsyapurāṇa though not in favour of polyandry gives two references to it.[7] How this unwanted thing not in element with Indian culture came into the Mahābāhrata and the Purāṇa is very difficult to explain. It may be, due to the constant contact of the Aryans with the non-Aryans; the non-Aryan element sometimes crept into the Aryan society without being aware of it.

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1 M.P. XXX, 52.
2 M.P.V, 12-14.
3 M.P. XII, 39; XLIX, 44; L, 48.
4 Sakṛt Kanyā pradīyate. M.P., CCVIII, 13; M.S. IX, 47; The Life of Hiuen Tsang, 79-80.
5 M.P. CCXXVII, 19.
6 M.P. CCVI, 16.
7 M.P.L. 51; M.P. IV, 47-49.

FINE ARTS

M. V. KRISHNAN

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(1) Historical perspective.

The emergence of man as a unique animal from the multifarious forms of living things on this earth is due to the development and control of his following faculties.

(*a*) The successful use of hand for the preparation of tools,

(*b*) The sense of discrimination,

(*c*) The flexible thumb,

(*d*) Stereoscopic vision.

(2) The skill of the hand

"Man is an animal which uses tools." It is with the use of tools that he has succeeded in his unceasing struggle for survival on earth. The history of these tools have been brought about by his successful use of hand. By slow assimilation and by trial and error method man acquired many skills by use of his hand. From the first crude flint implement of palaeolithic age he has now reached the nuclear age. In this long history the primary and most versatile and reliable tool of man has been his hand. Nations have been built, crushed and rebuilt by the hand. The weapons he has wielded, the writings he has left, the tools he has developeed, the skills he has acquired, owe much to his hand.

(3) Deterioration in the use of hand in our modern society

With the advent of the industrial age during the 18th century many a vocation which was formerly done by hand was replaced by machine. The thousand and one innovations of the modern age have brought leisure and pleasure for the common man, which was once available to the coveted few. Does our younger generation use their hand to the fullest

advantage in their daily lives ? Are they taught to use them intelligently and in close coordination with the dictates of their mind ?

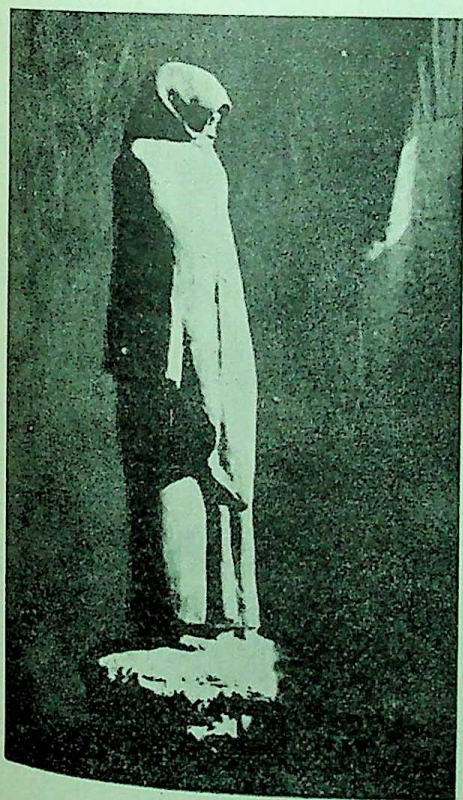
We have among us people (craftmen and technical workers) whose hand travels faster than their mind. We have men with acute mind but having unskilled hands. There are still others a comparatively limited ones whose hand and mind function in complete coordination. Among this last group are found the musicians, artists, surgeons, who are true masters of their vocation.

To acquire really mastery in any art or craft whether the medium is a musical instrument, malleable metal, marble, brush or scalpel, to the best of our individual capabilities requires, time, patience, and considerable devotion to one's ideals. Only by toil-tears and sweat can command be attained in the chosen vocation. Only by its attainment can one transcend his medium and give expression to the inner vision. Almost all of them require the dexterous use of hand.

What is really wrong in our education in the use of our hands ? Let us take the simple case of writing. In ancient times writing was considered an Art. The art of calligraphy was patronised by the kings and the church. But for the fine hieroglyphics of the Egyptians, the cuneiform script of the Summarians, the calligraphy of the scriptures of the later periods, it would indeed be difficult to trace the progress of man. But with our younger generation the art of fine hand-writing is becoming vague. The fountainpen, the printing press, the typewriter etc. though a boon in one sense have brought about the deterioration in the art of writing. Bad hand-writing is one of the causes of failure in the examinations.

In the higher stages of our education very little opportunity is available to our young men to acquire skill with their hand. Bound up in piling knowledge for winning one's bread, our youngmen seldom get the opportunity to seek some pleasure in some creative work which can soothe their mind and nerves.

GANDHARVAS

R. P. Singh

WINTER

M. V. Krishnan

Conclusion

The finer aspects of a nation's character are counted from its achievements in fine arts. Many a visitor from abroad comes to our country to see the wonderful creations of our ancient art and not to see the mills and factories that are springing up in every nook and corner of our country. Fine arts mirror a country's culture and civilisation. It dees not mean that technical and technological education are secondary. But with an emphasis on this education alone, we are creating a nation of workers mostly devoid of the use of their finer sensibilities. In order to make a perfect man it is necessary to provide opportunities for play of our finer sensibilities. This achievement is possible only when there are opportunities for mind and the hand to be able to produce things in close cooperation. This is possible only in the realm of Fine Arts, Music, Literature, Sculpture, Painting, and Architecture. All of them stem from one and the same source within us, i.e. urge for expression. It is sub-conscious reaction in us which prompts us, as individuals, to give expression to such reactions in one medium or other. It is, therefore, duty of education to provide a place for creative expression in our curricula, where the hand and the mind can work in complete union.

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A TERRACOTTA PANEL FROM ŚRĀVASTĪ

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The ancient ruins of Śrāvastī are scattered on the bank of the river Achirāvatī and they are known as SAHET-MAHET. The place Sahet is situated in the district of Gonda and Mahet in the Bahraich district of Uttar Pradesh. This site has been excavated from time to time by different archaeologists. First of all in 1862 and 1876 this place was excavated by General A. Cunningham. In 1876 when Cunningham was busy in the excavations of Sahet, Dr. W. Hoye was active in digging Mahet. Vogel and Daya Ram Sahani jointly excavated this site further in 1908 and beside the famous copper plate of Govinda Chandra they unearthed a number of terracotta figurines, seals and sculptures. Vogel published the report of his excavation in the year 1911.[1] In this report he identified a few terracotta panels as illustrating the story of the *Rāmāyaṇa*. The aim of the present paper is to study one of the panels from this group again. This terracotta panel can be dated back to the Gupta period.[2]

The panel depicts a male figure on the left, whose head is badly mutilated; a *dhotī* hangs down from his waist, an *Uttarīya* runs over the back and its two ends suspend down beneath the two hands. He is shown wearing *Kuṇḍalas* in ears and bangles in two hands. His right hand upraised, displays *Abhaya-mudrā*, while the left simply hangs down. Infront of him a female figure is represented sitting on her knees with hands folded. This female figure is also ornamented with *Kuṇḍalas* and bangles. The female figure is dressed in *Sārī*; her face is totally damaged. Around the two figures the border of the panel is decorated with lotus petals.[3]

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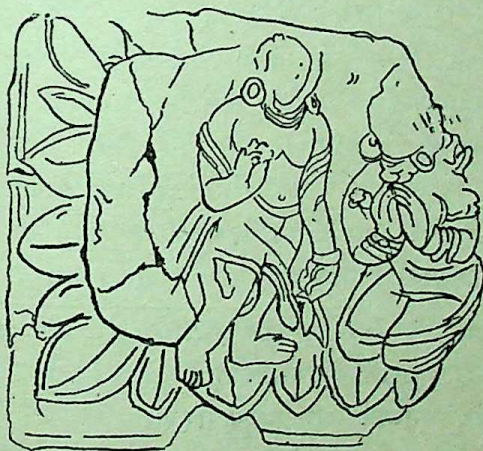
[1] *A. S. I. A. R.*, 1911.

[2] *Ibid.*, 1911; also Dr. C.C. Das Gupta, *"Origin and Evolution of Indian Clay Sculpture"*, p. 221.

On identification of the scene which it depicts, Vogel was the first scholar to work in his Report of Sahet-Mahet excavation which really brought this to light for the first time.[1] According to him it illustrates Lakshmaṇa, and Śūrpaṇakhā, the latter with bend knees and folded hands implores the former to grant her his love.[2] This identification of Vogel remained unquestioned for a long time until C. C. Das Gupta in the year 1944, in his Ph. D. thesis, which is now published, brought a little change in the identification of this scene. He believes that instead of Lakshmaṇa the male figure may be that of Rāma.[3]

In the booklet on ŚRĀVASTĪ, published in 1956, Shri Madan Mohan Nagar, has totally drawn upon Vogel and describes them as Lakshmaṇa and Śūrpaṇakhā.

Both the identifications of the scene invariably relate it to the Śūrpaṇakhā episode of the *Rāmāyaṇa*. However, certain facts, stated below, show that this cannot be accepted in any way.

A Terracotta Plaque from Śrāvastī

The first and major objection to previous identifications is the pose of *Abhaya* in the right hand of the male figure,

[1] A. S. I. A. R., 1911.
[2] *Ibid.*
[3] C. C. Das Gupta, '*Origin and Evolution of Indian Clay Sculpture*', p. 221.

identified as Rāma or Lakshmaṇa. *Abhayamudrā* is the posture in which the requestee is given amnesty to tender his or her reqeust before the Lord.[1] But, untowardly, any where in the Vālmīki's *Rāmāyaṇa* we do not find that Śūrpaṇakhā prayed Rāma or Lakshmaṇa for *Abhaya* to present her request before them. But as soon as she saw them, she went direct to Rāma and then to Lakshmaṇa and interrogated them without their conscent.[2] Under the circumstances to believe that she requested for *Abhaya* seems to be wrong. Thus in this story there cannot be any place for depiction of a male figure in *Abhaya* attitude.

Now come to the female figure. The female figure of this panel or the so-called Śūrpaṇakhā is sitting on her knees with hands folded. This pose of the female figure is the expression of verecundity, but in the whole of the *Rāmāyaṇa* we do not find Śūrpaṇakhā meeting Rāma or Lakshmaṇa with any gesture of implorement. Vālmīki has painted Śūrpaṇakha as obstinate, inpudent and fearful. She, in her very first meeting with Rāma, says, "My name is Śūrpaṇakhā. I am an ogress and can change my form. I dwell in the forest all alone and create fear amongst people. Rāvaṇa, the son of Vishravā is my brave brother; my another valourous brother is Kumbhakaraṇa who is always sleepy. Khara and Dūshaṇa, famous for their valiance in the war, are also my brothers and O Rāma, I am mightier than all of them".[3] She

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[1] J. N. Banerjea, *The Development of Hindu Iconography*, p. 473.

[2] शरीरजसमाविष्टा राक्षसी राममब्रवीत् ।
जटी तापसवेषेण सभार्य शरचापधृक् ॥१२॥
आगतस्त्वमिमं देशं कथं राक्षससेवितम् ।
किमागमनकृत्यं ते तत्त्वाप्राख्यातुमर्हसि ॥१३॥
Vālmīkiya Rām., Araṇya Kāṇḍa, 18-12-13.

[3] श्रूयतां राम तत्त्वार्थं वक्ष्यामि वचनं मम ।
अहं शूर्पणखा नामं राक्षसी कामरूपिणी ॥२०॥
अरण्यं विचरामीदमेका सर्वभयंकरा ।
रावणो नाम मे भ्राता यदि ते श्रोत्रमागतः ॥२१॥
वीरो विश्रवस पुत्रो यदि ते श्रोत्रमागतः ।

does not stop her horror talks here but further says, "I shall corrode away Sīta, who to me seems to be ugly, frivolous, disfigured and human with a sunken belly, along with your brother.[1]

From the above dialogues it become clear that Śūrpaṇakhā never met Rāma with any feeling of modesty. Her main ambition was to achieve sex satisfaction by creating dreads. So to identify female figure sitting on her knees with folded hands as Śūrpaṇakhā will be utter mistake. Thus it becomes clear that Śūrpaṇakhā neither cared for *Abhaya* of Rāma or Lakshmaṇa, nor she tried to prove herself timid and modest.

Now, attention is to be drawn, towards the dress and ornaments of the male figure and it is to be seen as to how far they prove that the story is not of Śūrpaṇakhā. In this panel the male figure is wearing *dhotī*; *uttarīya* covering the two shoulders and hand; bangles in hands and *kuṇḍalas* in ears. This dress and these ornaments may be either of a god or of a king but certainly not of an ascetic. Therefore, this male figure can not be a figure of Rāma or Lakshmaṇa during *Vanavāsa*. The meeting of Rāma and Lakshmaṇa with Śūrpaṇakhā took place when they were passing their days in forest and had relinquished all the stately decorations long before. They had become

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प्रवृद्धनिद्रश्च सदा कुम्भकर्णो महाबलः ॥२२॥
विभीषणस्तु धर्मात्मा न तु राक्षसचेष्टितः ।
प्रख्यातवीर्यौ च रणे भ्रातरौ खरदूषणौ ॥२३॥
तानहं समतिक्रान्ता राम त्वां पूर्वदर्शनात् ।
समुपेतास्मि भावेन भर्त्तारं पुरुषोत्तमम् ॥२४॥
Araṇya Kāṇḍa, ch. 11.

[1] विकृता च विरूपा च न सेयं सदृशी तव ।
अहमेवानुरूपा ते भार्यारूपेण पश्य माम् ॥२६॥
इमां विरूपामसतीं करालां निर्णतोदरीम् ।
अनेन सह ते भ्रात्रा भक्षयिष्यामि मानुषीम् ॥२७॥
Araṇya Kāṇḍa, ch. 18.

ascetics and in that state matted locks of hair and *chīra* were the only physical decoration.[1]

Vogel found many such terracotta panels, from Śrāvasti which he connected with several episodes of the *Rāmāyaṇa*. On identification of other panels as depicting from the *Rāmāyaṇa* views are likely to be undebatable. This panel also seems to be in the same series because all are similar in form, style and execution. Here we propose to give a possible identification of the scene of the panel from the same epic.

In the Vālmīki's *Rāmāyaṇa* reference comes of Ahalyā's redemption, who was relieved by Rāma from her husband Gautama's malidiction. On her meeting with Rāma Ahalyā offered hospitality to Rāma, the saviour.[1] This incident or meeting took place when Rāma was still a prince.

This is an alternative suggestion for the scene depicted on the panel, which does not contradict its main features. The question as to whether this panel may be associated with some other story, more appropriately, remains open.

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[1] अथ चीराणि कैकेयी स्वयमाहृत्य राघवम् ।
उवाच परिधत्स्वेति जनौघे निरपत्रपा ॥६॥
स चीरे पुरुषव्याघ्रः कैकेय्याः प्रतिगृह्यते ।
सूक्ष्मवस्त्रमवक्षिप्य मुनिवस्त्राण्यवस्त ह ॥७॥
Ayodhyā Kāṇḍa, ch. 37

EDUCATION IN BELGIUM

RAMAPATI SHUKLA

Teachers' Training College, B.H.U.

Belgium, which owes its separate existence as an independent State since 1830, is a very small country with a population of nearly 90 lakhs of which 10 lakhs inhabit the capital town of Brussels. It is a peculiar country in respect of language. It has no language of its own in the sense that there is no such language as Belgian. There are two national languages-Dutch in the north and French in the south. But both the languages are taught all over the country.

Literacy in Belgium is almost universal. There are not more than five per cent illiterate persons in the country and they too are either feeble minded or otherwise backward. Primary education from six years of age to twelve is compulsory in bilingual free schools of the State. Pre-primary education from 3 to 6 years, which is generally based on Kindergarten, modified by the Montessori Method, is not compulsory; but it is on the growth and most parents like to send their children early to schools. Belgium has been foremost in making primary education compulsory, as the law of compulsion was passed as early as 1840, only ten years after its independence.

Secondary education in Belgium starts at the age of twelve and continues upto 18 years of age. There are five main types of Secondary Schools :—

(i) Literary
(ii) Scientific and Mathematical
(iii) Commercial
(iv) Agricultural
(v) Technical

Latin is a compulsory subject in all the five types of schools. In the literary schools as many as five languages are to be learnt by every scholar. Besides Latin, they have to

learn, French, German, English and Dutch. It has already been mentioned that Dutch and French languages are national languages of Belgium. English and German are two important foreign languages which no Belgian can afford to forego. Latin, of course, is the cultural language of the continent. Thus, the inclusion of all the five languages becomes necessary in the curriculum. But one should not forget that all these languages are allied and the children do not find much difficulty in learning them.

School hours in Belgium are nearly the same as in India. Students have to take 40 lessons per week. But teachers are not much burdened with teaching work. They have to give only 20 lessons a week. Rest of the time they utilise in co-curricular activities.

As Belgium is primarily industrial, about seventy per cent of scholars go to schools for technical education or higher education in towns, wheresas only thirty per cent go to such schools in rural areas. The rest prefer to take general education which includes agricultural education.

The University Entrance Examination is taken at the age of eighteen. One has to obtain 50 per cent marks in each subject, and at least 66 per cent in the aggregate, to qualify for admission to a university. There are four universities in the State. The students enter university at the age of eighteen and they have to remain there upto the age of 22. After completing four years of college education the student gets a license, not a degree; the latter is postponed for a later period. From 22 to 23 years of age one has to join the school or college of Education to become a teacher in a secondary school. Social Service for one year is compulsory for boys. Thus no one can become a teacher in Belgium before the age of twentyfour.

The Primary teachers are trained in a special training college from 15 to 19 years of age. Fifty per cent of the schools are Government schools while the other fifty per cent are private, but all are aided by Government.

The following salary grades (converted in Indian Rupee) are allowed to teachers in different types of educational institutions :—

Primary Schools—	Rs. 5000 to Rs. 6000 per year
Secondary Schools—	Rs. 6000 to Rs. 8000 per year
University—	Rs. 8000 to Rs. 10000 per year

Although the nominal salary of teachers appears to be fairly high, the teachers in Belgium are not better off than their co-professionals in India, because living in Belgium is more expensive than it is here in our country. Houses are scarce and rents are very high in towns. A Primary teacher can hardly afford a house or a flat; he has to pull on in a single room. Food is also not cheap there. But some of the important articles of food, like milk and butter are pretty cheap as compared to other articles. Therefore people can easily afford nutritious food which is so essential for health.

In spite of biiingualism the question of national integration does not arise in Belgium. The people are patriotic by nature and they hardly need any formal lesson on patriotism and common culture. India can take a lesson from this small but progressive country.

अपि ग्रावा रोदित्यपि दलति वज्रस्य हृदयम्

आचार्य पं० त्रिनाथ शर्मा
काशीविश्वविद्यालयः

जायते महती व्यथेदं विचार्य या हि संस्कृतभाषा, आक्रान्तसकललोका पुरा पण्डितैरपि शिरसा वन्दनीयाऽऽसीत्, साद्य स्वदेशेऽपि स्वाधिपत्यं स्थापयितुमसमर्था। हन्त! विधेर्विधानं विचित्रम्। अपि च हिन्दोरेतद्दौरात्म्यम्। अधिकं किं ब्रूमः, जीवन्तः सन्तो मृताइव विलसन्तस्तदुद्धारार्थं न किमपि विचेष्टमाना उभयलोकतः परिभ्रष्टा भवामः।

व्यवहारानुसारेण कापि भाषा प्रचलति। साम्प्रतं पण्डिताश्छात्राश्चभाषान्तरपक्षपातग्रस्ता अस्या भारत्याः सदभ्यासं न कुर्वन्ति। यथाऽन्यभाषासेवकास्तत्तद्भाषागत सुषमाभिवृद्धये प्रयतन्ते न तथा संस्कृतज्ञाः रात्रिन्दिवमपि विशेषपरिश्रममस्याः कृते सम्पादयन्ति।

कया रीत्या व्यवहारशक्तिर्जागरणीया, केन विधिनाऽस्या आपामरपण्डितं प्रचारो विधेयः, केषां शब्दानां पर्यायसृष्टिः साधु सम्पादनीया, अद्यत्वे के के विषया नवा लेखनीया इत्येतेषु विषयेषु नोपैति चाभिनवसंस्कृतविदां दृष्टिः।

अतीवदुःखकरमिदं; सर्वे पण्डिताः स्वस्वभाषायाः कृते प्राणदानमपि प्रदातुमग्रेसराः सन्ति। अद्यत्वे तत्पुत्री धावत्यग्रे। मातुः किन्नसामर्थ्यम् द्रढिम्ना समुन्नतिं कर्तुम्?।

हे लोकनेत्रकण्टक! हे श्मशानप्रसूनवदुपेक्षित! हे पाटिताशशिखामणे! हे संस्कृतज्ञसुधीसन्दोह! रात्रिर्गता, शय्यां मुञ्च, उत्तिष्ठ, जागृहि, चक्षुः क्षणमुन्मील्यावलोकय, पाश्चात्यकुप्रचारेण निपतिताया अमरभारत्या दीनदशाम्। हे मतिमतांवर! शीघ्रातिशीघ्रं दक्षतामुन्नय। असारं जीविकार्यं धनिकानां चाटुचर्चायां चञ्चल मनो मा कुरु। धीर! स्मर—

चलन्ति गिरयः कामं युगान्तपवनाहताः।
कृच्छ्रेऽपि न चलत्येव धीराणां निश्चलं मनः॥

इतः परं किं निगदनीयं रात्रिर्गता शय्यां मुञ्च परित्यज्य सकलप्रपञ्चमाश्रयस्व गीर्वाणभारतीम्।

DELHI MILK SCHEME

RAVIKUMAR, B. Com. (Part III)

Delhi Milk Scheme is one of those milk schemes of the country which have been established to make arrangements for milk and its products for the benefit of common people. Just as the Aray Milk Colony is for the benefit of the Greater Bombay, Delhi Milk Scheme is a great boon for the consumers of Delhi and New Delhi. It is a generous gift from the Goverment and the people of NewZealand to the people of the Republic of India under the Columbo Plan.

At present the total capacity of milk production of this project is 4,500 mds per day which is insignificant in view of the growing population of Delhi. Hence attempts are being made to raise the total production capacity to 12,000 mds per day to satisfy the total consumers' demand for milk and its other allied products.

This Milk Scheme is, in fact, an entirely different scheme from Aray Milk Colony of Bombay. In Aray Milk Colony, thousands of cattles are visible in its area; but here none could find a single cattle. It is on account of this reason that this scheme is supported by a large number of milk contractors and co-operative societies which are spead in a radius of about fifty miles from Delhi. These milk contractors and co-operative societies collect milk from actual producers and supply it to the Scheme round the clock. The milk-vans of the scheme bring milk from outstation agencies.

Production Activities

After collecting milk, the first important work which is done here is the quality checking. They cool it at a temperature of 20°C for few seconds in six milk tanks erected there for this purpose. After milk is cooled down, it is sent for heating process where it is heated at a temperature of 80°F for about 15 seconds. Then it is sent to the processing plant for mixing

water, milk-powder, colour and scents. Now it is sent to the packing section where with the help of automatic machines the bottles are washed, milk is filled in and they are sealed. Now the milk is ready for consumption purposes. It should be noted that it takes about thirty six hours for milk to reach the consumers from the time it was originally milked. At preset the rate of milk and its fat contents are as follows :—

Rate and Percentage of Fat Content in Each Type of Milk

	Name of Milk	Rate per Liter	%of Fat Contents
1	Buffalo Milk	0.62 nP.	06.54%
2	Cow Milk	0.62 ,,	05.00%
3	Tonned Milk	0.42 ,,	03.50%

Tonned Milk is also manufactured in this scheme with the following contents mixed in the given proportions :—

(i) Buffalo Milk 47%
(ii) Water Milk 45%
(iii) Milk powder 8%

Apart from pure milk, the scheme is also planning for producing flavoured milk, scented milk, icecream, butter, cheese, condense milk, cream and Ghee in the near future.

Selling Process

For selling milk in bottles the scheme has made arrangements to establish 650 milk centres throughout the length and breadth of New Delhi and Delhi where girl saleswomen have been appointed to arrange distribution. They also sell the other products of the scheme to the consumers. Milk is supplied to the consumers both in morning and evening either on cash basis or on coupon basis.

Like other dairies in India, Delhi Milk Scheme has also been planned and executed on the western pattern. They remind us the dairy industries of Holland, Denmark and New-Zealand which are highly advanced nations in this respect. In view of the growing demand for fresh, unadulterated and wholesome milk from the hygenic point of view, it is essential that such dairies should be established by the Government in other parts of the country as well.

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COLLEGE REPORTS FOR 1963

संस्कृत महाविद्यालय

काशी हिन्दू विश्वविद्यालय की संस्थापना के चार मुख्य उद्देश्यों में पहिला उद्देश्य यह था कि हिन्दू-शास्त्रों और संस्कृतसाहित्य के अध्ययन में उन्नति की जाय जिससे हिन्दुओं के उत्तम विचार एवं सस्कृति तथा भारत की प्राचीन सभ्यता की सभी उच्च और उत्तम बातों की रक्षा और प्रचार हो सके। इससे समस्त संसार का और विशेष कर हिन्दुओं का लाभ हो।

इस उद्देश्य की पूर्ति के लिए इस विश्वविद्यालय ने संस्कृत महाविद्यालय की स्थापना की। इस महाविद्यालय के अन्तर्गत दो शाखाओं (Faculties) का कार्य सुचारु रूप से चल रहा है।

धर्मविज्ञान-शाखा द्वारा ऋग्वेद, शुक्लयजुर्वेद, कृष्णयजुर्वेद, सामवेद, पौरोहित्य और कर्मकाण्ड का अध्यापन होता है। कर्मकाण्ड और पौरोहित्य का अध्यापन विशेषकर इसलिए किया जाता है कि यहाँ के छात्र यज्ञोपवीत, विवाह, श्राद्ध आदि कृत्यों को विधिपूर्वक कराकर भारतीय संस्कारों की रक्षा कर सकें। इसीलिए छात्रों को यह सुविधा दी गई है कि वे अपने-अपने शास्त्रों के अध्ययन एवं परीक्षा के साथ-साथ कर्मकाण्ड एवं पौरोहित्य के अध्ययन एवं परीक्षा का भी लाभ उठा सकें। इसी शाखा के अन्तर्गत धर्मशास्त्र एवं मीमांसा का भी अध्यापन होता है।

प्राच्यविद्या शाखा द्वारा वेदान्त, न्याय, वैशेषिक, सांख्य, योग, पुराण, इतिहास, जैनदर्शन, बौद्धदर्शन, व्याकरण, साहित्य, ज्योतिष (गणित एवं फलित), हिन्दी तथा अंग्रेजी का अध्यापन होता है।

इस वर्ष महाविद्यालय में अध्ययन करने वाले छात्रों की संख्या निम्नलिखित है :—

	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष
मध्यमा	७४	१६	१९
पौरोहित्यरत्न	२३	३	५
शास्त्री	७०	२२	२१
कर्मकाण्डशास्त्री	१	१	
शास्त्राचार्य	१०	१४	१४
चक्रवर्ती (शोधकार्य)	४	६	५

निम्नलिखित सूची से पता लगेगा कि भारत के प्रायः सभी प्रान्तों से तथा विदेशों से भी विद्याप्रेमी छात्र इस महाविद्यालय में विद्याध्ययन करने आते हैं :—

भारतीय प्रान्त		विदेश	
उत्तर प्रदेश	१२७	नेपाल	२२
विहार	९१	पाकिस्तान	१
मध्यप्रदेश	२८		२३
महाराष्ट्र	६		
जम्बू (काश्मीर)	१		
आसाम	२		
पंजाब	४		
आंध्र	१		
उड़ीसा	२		
गुजरात	३		
केरल	२		
मैसोर	३		
पश्चिम बंगाल	१		
राजस्थान	५		
उत्कल	३		
	२७९		

इस साल दो नए अध्यापक नियुक्त हुए हैं—पं० जगदीशचन्द्र शास्त्री साहित्य में तथा पं० अच्युतानन्द झा ज्योतिष में। इन दो अध्यापकों के अतिरिक्त अन्य सभी अध्यापक प्राचीन हैं।

ऊपर बतलाए गए सब शास्त्रों के अध्ययन के साथ-साथ यहाँ के अध्यापक शोध (Research) के काम में भी महान् प्रयत्न करते हैं और अनेक ग्रन्थ प्रकाशित किए जाते हैं। वेद एवं साहित्य का शोध-कार्य प्रथमपञ्चवर्षीय योजना में प्रारम्भ हुआ और वह द्वितीय पञ्चवर्षीय योजना में भी चालू है। इस शोध-विभाग द्वारा 'सामतन्त्र' प्रथमभाग तथा 'विक्रमाङ्कदेवचरित' प्रथमभाग का प्रकाशन हुआ है। चक्रवर्ती श्रेणी के अनेक छात्र इन अध्यापकों के तत्त्वावधान में अनेक विषयों पर शोध-कार्य कर रहे हैं। इन शोधकार्य-कर्ता छात्रों को छात्रवृत्तियाँ मिलती हैं। व्याकरण में शोध करने वाले एक छात्र को १००) मासिक की छात्रवृत्ति भारत सरकार से मिलती है। सांख्य-योग के शोधकर्ता एक छात्र को २००) मासिक की छात्रवृत्ति भारत सरकार देती है। चक्रवर्ती कक्षा के ३ छात्रों को काशिराज की ओर से ४००) वार्षिक की छात्रवृत्तियाँ मिलती हैं। इस प्रकार शोध का कार्य यहाँ बड़ी तत्परता से किया जा रहा है और उसे महाविद्यालय की ओर से तथा भारत सरकार की ओर से बड़ा प्रोत्साहन दिया जा रहा है।

यहाँ के अध्यापक निरन्तर नए-नए ग्रन्थों का निर्माण, सम्पादन तथा अनुवाद करके साहित्य का कलेवर बढ़ाते रहते हैं। निम्नलिखित विद्वानों ने महत्त्वपूर्ण ग्रन्थों का प्रकाशन किया है :—

पं० विश्वनाथ शास्त्री—धर्मशास्त्रसर्वस्व, मञ्जीरमञ्जु, मन्त्रचन्द्रिका

पं० गजानन शास्त्री—वेदान्त परिभाषा की प्रकाश नामक हिन्दी व्याख्या

पं० मधुसूदन शास्त्री—रसगङ्गाधर की मधुसूदनी तथा बालक्रीड़ा टीका

श्री दरबारीलाल कोठिया—प्रमाणप्रमेयकालिका, भगवान् महावीर, जैनदर्शन सामलेखना

डॉ० सीताराम शास्त्री—प्रौढ मनोरमा, बृहच्छब्दरत्न, लघुशब्दरत्न का सम्पादन

पं० राजमोहन उपाध्याय—वास्तुप्रबन्ध, अष्टग्रही

पं० केदारदत्त जोशी—सिद्धान्तशिरोमणि का शिखाभाष्य, सुधाकरद्विवेदी का जीवनचरित्र

पं० शिवदत्त चतुर्वेदी—पं० गिरिधरशर्मा के साहित्यिक निबन्धों का सम्पादन

पं० अम्बिकादत्त उपाध्याय—'हिन्दूधर्म और आचार' का संक्षिप्त संस्करण

इस वर्ष का वार्षिकोत्सव बड़े समारोह के साथ मनाया गया। कुलपति श्री एन्० एच्० भगवती ने सभापति के आसन को सुशोभित किया था। विश्वविद्यालय के तथा काशी के अनेक लब्धप्रतिष्ठ व्यक्तियों ने इस उत्सव में सम्मिलित होने की कृपा की थी। म० म० पं० गिरिधर शर्मा, म० म० पं० मथुरानाथ दीक्षित, पद्मभूषण पं० राजेश्वर शास्त्री, पं० टी० बी० आर० दीक्षित, पं० भागवतप्रसाद मिश्र आदि अनेक विद्वानों के समागमन से इस उत्सव का महत्व बढ़ गया था। श्री कुलपति महोदय ने सुमधुर एवं प्राञ्जल संस्कृत वाङ्मय भाषण से सम्पूर्ण सभा को प्रभावित कर दिया। आपने संस्कृत भाषा के अध्ययन और धर्मशिक्षा पर बड़ा बल दिया और बतलाया कि धार्मिक प्रवचनों, विशेष कर प्रति सप्ताह रविवार को होने वाले गीताप्रवचन में, सम्मिलित हो कर ऐहलौकिक एवं पारलौकिक दोनों प्रकार के लाभ उठाने चाहिए। यहाँ यह कह देना उचित होगा कि कुलपति महोदय के इस प्रोत्साहन से प्रवचनों में सम्मिलित होने वाले सज्जनों की संख्या अधिकाधिक बढ़ती जा रही है।

अधिकांश छात्रों को कोई न कोई छात्रवृत्ति मिलती है। शिक्षा तो सभी को निःशुल्क दी जाती है। इनके सदाचार पर बहुत ध्यान रक्खा जाता है और छात्रवृत्ति देते समय तो इसे बहुत ही महत्व दिया जाता है। इन छात्रों में से २४२ छात्र नगर में रहते हैं। उनके चरित्र के निरीक्षण का भार उनके अभिभावकों पर रहता है। रुइया छात्रावास में ६० छात्र निवास करते हैं। इस छात्रावास का निरीक्षण एक सदाचारी विद्वान् द्वारा होता है जो इन छात्रों की देखरेख बहुत सावधानी से करते हैं। इस छात्रावास के आस-पास सुन्दर उद्यान हैं जिनके कारण छात्रों के स्वास्थ्य की वृद्धि में बड़ी सहायता मिलती है। छात्रशाला के छात्रों को देशी कसरतों तथा विदेशी खेलों का भी पर्याप्त अवसर मिलता है जिससे वे अपनी मानसिक सम्पत्ति के साथ-साथ शारीरिक सम्पत्ति को भी बढ़ा सकें। इन छात्रों को निश्शुल्क निवास स्थान मिलता है और वे निश्चिन्त हो कर पूर्ण मनोयोग के साथ विद्याध्ययन कर सकते हैं।

इस वर्ष निम्नलिखित रूप से छात्र भिन्न-भिन्न परीक्षाओं में सम्मिलित और उत्तीर्ण हुए।

परीक्षा	सम्मिलित छात्रों की संख्या	उत्तीर्ण छात्रों की संख्या
मध्यमा प्रथमवर्ष	१७	१३
" द्वि० वर्ष	२४	२०
" तृ० वर्ष	९	६
पौरोहित्यरत्न प्रथमवर्ष	३	२
" द्वि० वर्ष	६	५
" तृ० वर्ष	१	१
शास्त्री प्रथम वर्ष	२२	२०
" द्वि० वर्ष	१९	१८
" तृ० वर्ष	११	१०
कर्मकाण्डशास्त्री प्र० वर्ष	१	१
शास्त्राचार्य प्र० वर्ष	१४	११
" द्वि० वर्ष	१८	११
" तृ० वर्ष	१५	११

CENTRAL HINDU COLLEGE

Established by Mrs. Annie Besant and accepted later by Pandit Madan Mohan Malviya as the nucleus of the Banaras Hindu University, the Central Hindu College has represented certain distinct ideals of education. Besides imparting knowledge to students, as many other institutions do in the customary fashion, it was expected to help the resurgence of the nation at all levels—social, political and spiritual.

Not long ago, among the different colleges of the University, the Central Hindu College had the largest number of students on its rolls. During recent years, however, there has been a trend towards decline in its numerical strength. The reasons for this, of course, are obvious. For some years past we have been going by the principle of selection so far as admission to the M. A. classes is concerned. The minimum percentage of marks both in the aggregate and in the subject which makes an applicant eligible for admission to M. A. (Previous) has been fixed as 45%. Naturally we are not able to take in all those who apply for admission. This stress on

quality rather than on numbers too has contributed in no small measure to the decline in the total strength of the College. While we are wholeheartedly for the benefits of education upto the undergraduate stage, being extended to every body wishing for them, we feel that for the maintenance of correct academic standards we have to be selective at the post-graduate level.

In spite of severe economic handicaps which mean inadequate library facilities, lack of rooms and shortage of hands on the teaching staff, we have always kept before us high academic standards and sought to achieve them as best as we possibly can.

1. Research Projects

Department of Commerce—9, Economics—12, English—10, History—7, Hindi—13, Mathematics—7, Philosophy—6, Political Sciences—16, Psychology—21.

2. Research Publications

Commerce 15, Economics 11, English 3, History 3, Hindi 16, Mathematics 29, Philosophy 1, Psychology 9.

3. Academic Accomplishments

Commerce—two U.G.C. scholarships, Economics—one departmental scholarship, English—one American scholarship for study in the U.S.A., History—one junior fellowship and one research scholarship of U.G.C, and a deptt. scholarship, Hindi—one departmental scholarship, three for Hindi speaking students and two for non-Hindi speaking and one Kashiraj scholarship, Mathematics—four Govt. of India research training scholarships, two U.P. scientific research scholarships and one departmental scholarship, Philosophy—one U. G. C. junior scholarship, Political Science—one departmental scholarship, Psychology—one U.G.C. junior fellowship and one departmental scholarship.

4. Visitors

Commerce :—Prof. W.F. Chalmer (U.S.A.), Prof. Milton Friedman, (U.S.A), Prof. A. Das Gupta (Delhi).

English :—Dr. D. Wodlinger (U.S.A), Dr. Miss P. Dua (U.S.E.F.I.)

Hindi :—Dr. Jai Deva Singh, Prof. H. B. Bhayani, Dr. Devendra Sharma, Pt. Lakshmi Narain Mishra.

Philosophy :—Rao Saheb Murugesa Mudaliar, Prof. A. J. Bahm (New Mexico), Prof, Joseph Piper (West Germany), Prof. R. H. Robinson (U. S. A.), Dr. Indra Sen (Pondicherry).

Psychology :—Dr. Allen Grey (Columbia University), Mrs. R. Sorensen (U. K.), Dr. S. Mohsin, Dr. J. Nag Chaudhury.

We realise the importance of research and almost every department has a dozen or more research projects in hand. For a successful implementation of any elaborate scheme of research, however, we must have a well-furnished central library and also a sectional library with a good stock of reference books in each department for teaching as well as research. Standard journals and periodicals relating to different subjects must be easily available to our research students. We are not able to provide separate rooms to our teachers who need some kind of privacy for research work. With the completion of the fourth wing of the College building, we hope, the situation will improve in this regard and all teachers in a department will not have to sit together crowded in one room as they have been doing till now. With better library facilities and separate rooms for teachers the academic tone of the College is bound to improve. This will result in a greater output by way of research papers and publications.

Need for a Research Journal

I may take this opportunity of inviting your attention to yet another of our urgent needs. There is enough material in every department which can be brought out in the form of an annual research bulletin. We have not dared to embark on this venture so far because of financial difficulties. The Humanities deserve a research journal as in the Science, Indology and Music Departments, the research journals of which are financed by the U.G.C.

Notwithstanding handicaps enumerated above, work on the research front has been going on satisfatorily. This year twelve persons got the Ph. D. degree of this University. Their names are : Shri V. S. Mall, Smt. Gyanvati Trivedi, Km. Jamila Kureshi Shri Kashinath Singh, and Kaushilya Gupta in Hindi; Shri Vijaya Ram Singh, Shri Jagdish Singh, Km. S. Pannu and Shri B. P. Rao in Geography ; Shri A. C. Banerjee in Economics; Shri D. S. R. Roy and Shri S. Masood in Mathematics and Km. Indra Bhan Singh in Psycholggy. Dr. D. C. Guha of the Department of Sanskrit received the D. Litt. degree of the Calcutta University this year. We congratulate all these friends on their achievement and hope that they will persevere in their academic efforts and win yet more laurels in the years to come.

Some of our teachers won academic honours by way of a recognition of their abilities by the wider academic world. Dr. R. N. Bhargava, Professor and Head of the Department of Economics has gone to the University of Colorado, U. S. A., as a Visiting Professor. Dr. S. K. R. Bhandari, Professor and Head of the Department of Commerce, acted as Chairman at the fourth Technical Session of the Seminar on "Controlling Costs of Industrial Operations." Dr. M. M. Sinha, Professor and Head of the Department of Psychology also presided over a sectional meeting at the All-India Psychology Conference. Dr. A. P. O'Brien, Professor of English, was elected as the Joint General Secretary of XIIIth Session of the All India English Teachers' Conference at Lucknow. We offer our warmest feliciations to these friends and have every confidence that they will continue to win glory for themselves and the institution.

Dr. K. V. Rao joined as Professor and Head of the Department of Political Science towards the close of the last academic session. Dr. Hira Lal Singh who had gone from this College as Professor of History to the University of Gorakhpur, came back recently as Professor and Head of the Department of History here. We extend a hearty welcome to these two

friends and hope that the Department of Political Science and History will make good progress under their able stewardship.

I also take this opportunity of congratulating Dr. A. Singh and Dr. B. K. Singh of the Department of Economics, Dr. N. C. Joshi and Dr. (Miss) P. Agrawal of the Deparment of Psychology, Shri A. K. Shah of the Department of Commerce, Dr. S. N. Singh of the Statistics Section of the Department of Mathematics, Dr. D. C. Guha and Dr. V. S. Mall of the Department of Hindi on their appointment as Readers.

The Central Hindu College suffered a great loss in the sad and untimely death of Dr. R. S. Tripathi, Professor and Head of the Department of History, in March 1963. He had a distinguished record of service here lasting over three decades. With a number of erudite books to his credit he had acquired an eminent place among the scholars of ancient Indian History. He was also the Principal of the College for a number of years and gave proof in this capacity of great administrative competence. His death meant a snapping of the link between the past and the present and was naturally very poignantly felt by all of us.

Towards the close of the last session, the Department of English in collaboration with the United States Information Service organised a symposium on American Literature in which many American and Indian scholars from different universities participated. The standard of papers and discussions was high and our friends in the Department of English made a significant contribution to the Seminar.

WOMEN'S COLLEGE

The College has on its rolls 432 students (290 day scholars and 142 reside in the hostel). The Science Section has 124 students while 308 are on the Arts side. Our students and staff hail from the different States of India, keeping up the all India character of this University.

Results :—Though our results in P.U.C. Science have not been up to the mark, the general results have been satisfactory. We have had cent percent results in our first batch of B. Sc. students sent up this year. The overall percentage of passes works out as follows :

P. U. C. Arts	91·4%	B.Sc. Part I	57%
P. U. C. Sc.	44%	B.Sc. Part II.	66·6%
B. A. Part I.	81·3%	B.Sc. Part III.	100%
B. A. Part II.	62%		
B. A. Part III.	81.%		

We are proud to mention that the following students of our College secured positions in the University Examinations. Mrs. Usha Devi obtained a first class and first position among the B. A. and B. Com. students of 1963. In B. A. Part II Miss Krishna Banerjee secured the second position and in B. A. Part I Shail Kumari Srivastava and Indira Roy stood second and third in order of merit. In P. U. C. Arts, Leela Rao secured the first position with distinction in General Science. Indira Bhaduri was second with distinction in General Hindi, General Science and Vocal Music, and Vasanti Bhandari stood third with distinction in Logic.

Scholarships

Our students enjoy the facilities of a number of scholarships both from the University and the Central and the State Gevernments. At present 37 are getting scholarships from the University and one from the Government of India. There are 6 U. P. Government merit scholarship-holders and four B.H.U. merit scholarship-holders. Besides, 106 students get the benefit of freeships.

The Staff

There have been quite a few changes among our staff due to resignation and study leave. Mrs. Krishna Arya, Reader in Economics, gave up her job to settle in Africa. She had worked for more than thirteen years in the College, and we wish her all happiness and prosperity in her new sphere

of life. Dr. M. Shakuntala, Reader in Physics, has joined the Atomic Energy Research Institute in U. K. at Harwell on a fellowship. It is a matter of great pride to this College that her research work has been appreciated from scholars.

We are happy to welcome (Mrs.) Shyamlata Goyal who has returned from Russia and Dr. (Mrs.) Shobha Rani Basu who was away for a year on a lecture tour to the States and participated in the Visiting Asian Professor's Project. She gave extensive lectures on Indian culture and civilization and on comparative religion which were much appreciated. On behalf of the teachers of India, she presented an autographed photo of Dr. S. Radhakrishnan, the President, to Dr. H. B. Glemn, the Director of the Project.

It is a matter of pleasure that Mrs. Gyanwati Trivedi, Reader in Hindi, took her Ph. D. degree in Hindi at the convocation for her learned thesis—"(गोस्वामी तुलसीदास की दृष्टि में नारी और मानव जीवन में उसका महत्व)".

Another member of the staff in the same department, Miss Jamila Quraishi has also received the award of the Ph. D. degree for her thesis on "Contribution of Islamic Culture to Medieval Hindi Literature" (इस्लामी संस्कृति का मध्ययुगीन हिन्दी साहित्य में योगदान).

Miss. Hira Malani has returned from Hyderabad after completing the four months' course at the Central Institute of English.

Mr. V. B. Smart, lecturer in Painting, was awarded a prize of Rs.500/—for his painting "Agni Varna Ki Kam Krida" in the All India Kalidas Samaroha Painting and Scientific Exhibition held at Ujjain. Miss Nalini Gajendragadker read a paper and illustrated the same with demonstrations at All India Music Conference at Madras.

These are some of the distinctions won by our staff members. Many of them have also been selected as Delegates to the various conferences in their respective subjects ;— Dr. Mrs. Kamalaveni Chandrasekhar to the Science Congress, Mrs. Leela Desai to the English Teachers' Conference, Mrs.

Saraswati Srivastava to the Political Conference, Dr. Shobha Rani Basu to the International Cultural Conference and Philosophical Conference.

We welcome on our staff Mrs. Saroj Agrawal for English, Mrs. Pushpa Lata Pratap for Psychology, Mrs. Leena Banerjee for History, Mrs. Pushpa Basu for Music, Miss Meenakshi Devi for Physics, Miss Mohini for Geography and Mr. Makarandji Rai as Tabla accompanist.

Athletic Association and N.C.C.

The Women's College Athletic Association started its activities this year with the formation of the executive of the Athletic Association early in August with (Mrs.) Leela Desai, (then acting Principal) as President and (Miss) Mulla as Vice-President and Miss Ranjini as Hony. Secretary and other staff members incharge of different games.

The annual games and sports events were conducted on the 17th and 18th December, Miss Kusum Haksar, B. Sc. Part II is the individual champion for this year. In this connection I would also like to mention the name of Miss Basana Roy of P.U.C. Arts, a keen athlete who participated in the Ninth National Gymnastic Competition of India held at Jhansi and won the second All India Championship.

Our students have acquitted themselves creditably in the N.C.C. also. In the Summer Training Camp held at Himachal Pradesh, the senior division (under Lt. Miss Aruna Moitra) won the first prize for kit outlay and discipline. This competition was organized on an All India basis.

The results of the senior division for G I and G II certificates have been cent percent.

We have two more officers this year: 2/Lt Miss Shanta and 2/Lt Miss Nandita Sen, who have returned after the completion of their three months' training at Kamptee. The N.C.C. training for all the women cadets of the University is in full swing in the Women's College.

Cultural Association

The Cultural Association for 1963-64 was inaugurated by our Vice-Chancellor Justice N. H. Bhagwati on the 7th of August. The Cultural Association has been very active since the beginning of this academic year under the guidance and supervision of Dr. (Mrs.) Annapurna Shukla, assisted by the able staff advisors (Smt. Sita Srivastava, Miss Pushpa Kapoor, Mrs. Sarojini Malaviya, Miss Usha Kiron Mehra) & student office bearers.

During the Ist term every Saturday in the 9th period, cultural programmes of a high order were presented by students of different classes separately. This induced in them a healthy competitive spirit which brought out the best talents in them.

The Cultural Association hitherto was run without any funds at its disposal but this year we are entitled to collect Rs.2/- from each student as sanctioned by the Standing Committee.

The highlights of this year's activities are :—

(1) A talk on German Education by our Registrar Major S. L. Dar, (Delivered on 7th Sept.).

(2) A reception to the Project India 1963 students from Los Angeles, California, U. S. A. (who have sent an appreciation of the warm reception given to them by the staff and the students alike).

During the second term, the association's energies were diverted for getting up a variety entertainment for the College day. Our various debates and competitions were conducted under its auspices. A painting exhibition was also held and it was opened byMrs. Bhagwati (21-12-63).

The University authorities decided to have a separate Women's College delegacy union, to give the girls greater scope and opportunity to develop their talents. The Delegacy Union decided to take on itself the publication of the Women's College magazine ; and Miss Vimala Devadhar edited the issues of "Jyoti" for two successive years efficiently.

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Old Students' Association

Our Old Girls Meet was organized by (Mrs.) Saroj Agrawal and (Mrs.) Nirmala Kaushik, our new energetic secretaries. We were happy to meet them.

Distinguished visitors to College

The College has had many distinguished visitors and delegations visiting it during this academic year. The most outstanding amongst them being :—

1. (11th Aug. 1963) Mrs. Kusum Trivedi, Member, Planning Commission, U. P.
2. (28th Nov. 1963) Japanese Religious Delegation.
3. (1st Aug. 1963) Delegation of students from Los Angeles under the Project India 1963 Scheme, American Panel sponsord by U. S. I. S.
4. (24th Nov. 1963) Dr. and Mrs. C. D. Deshmukh.
5. (3rd Dec. 1963) Dr. and Mrs. Lefin, Chairman Deptt. of Physics, Eastern Illinois University.
6. (21st Dec. 1963) Mrs. Sucheta Kripalani, Chief Minister of Uttar Pradesh.

Development

The building scheme for Rs. 1lakh and 40 thousand, sanctioned by the U. G. C. under the 3rd Five Year Plan is yet to take a concrete shape. An early construction of this additional block to house the laboratories of Home Science, Psychology and Geography, besides rooms for Music classes will ease the problem of class-room accommodation. We are looking forward to the early completion of this additional block.

A covered stage with a green room attached and an all-round auditorium has at last been completed and we are thankful to the P. W. D. for completing it in time to hold our annual functions. We hope to have in the near future a gallery constructed in front of the auditorium which would provide additional space, very badly needed for our functions. Further we are also in need of departmental rooms.

Library.

We are thankful to the authorities for having got a sanction of Rs.20,000/—for the Science section of the College from the U.G.C. for the purchase of text-books on scientific subjects. I hope this facility will be extended to the Arts section also.

The need for a library block has been felt for long time. A good library is the focal point of all educational institutions. Its need is now felt, all the more, with the introduction of tutorials and three year degree courses with all its heavy curriculum and I am sure our Vice-Chancellor will give a sympathetic consideration to our legitimate requirements as he has always bestowed due consideration to the needs and requirements of the Women's College, such as introduction of cadres, facilities for taking post-graduate classes etc. We are deeply indebted to our Vice-Chancellor for all the good that he has conferred upon the Women's College from the time he has assumed charge of office as the Vice-Chancellor.

Before I conclude, I wish to thank the Pro-Vice-Chancellor, Registrar and the Honorary Treasure and other administrative and academic officers of the University for the kind help and cooperation which they extended to the Women's College.

I also wish to express my appreciation of the good work done by my collegues, both academic & administrative and by our students for participating in the different activities of our College.

COLLEGE OF MUSIC & FINE ARTS

1. Examination Results—1963.

Examinations.	No. of candidates appeared	No. of candidates passed	Percentage of Passes
Admission Certificate in Music ...	30	24	80%
Diploma in Music ...	8	8	100%
B. Mus. Degree Course ...	7	7	100%
M. Mus. Degree Course ...	7	7	100%
Junior Diploma in Painting ...	2	2	100%
Senior Diploma in Painting....	2	2	100%
Junior Diploma in Sculpture...	1	1	100%
Senior Diploma in Sculpture...	1	1	100%

2. Admision—1963-64.

Course	Male Students	Female Students	Total
Admission Certificate Course in Music II-Yr. (Old). ...	28	22	50
Diploma Course in Music (New)			
I-Yr.	73	29	102
II-Yr.	–	2	2
III-Yr.	10	10	20
Diploma in Music (Old)			
IV-Yr.	3	9	12
Diploma Course in Painting (New)			
I-Yr.	–	2	2
II-Yr.	1	3	4
III-Yr.	1	3	4
Junior Diploma in Painting (Old)			
II-Yr.	1	–	1
Senior Diploma in Painting (Old)			
III-Yr.	1	–	1
IV-Yr.	6	–	6
Diploma Course in Sculpture (New)			
I-Yr.-III-Yr.... ...	–	–	–
Junior Diploma in Sculpture (Old)			
II-Yr.	1	1	2
Senior Diploma in Sculpture (Old)			
III-Yr.	1	–	1
B. Mus. VI-Yr. (Old).	5	2	7
B. Mus. (Three Year Degree Course)			
Part I.	1	–	1
Part II.	4	1	5
M. Mus. (Previous) VII-Yr.	4	2	6
M. Mus. (Final) VIII-Yr.	2	1	3
D. Mus. (Final).	2	–	2
Degree in Fine Arts (New).			
Part I (Painting)	–	4	4
Part II (Painting)	4	–	4
Part II (Sculpture)	–	1	1

3. Changes in Courseṣ, Syllabus etc.

The Music Re-organisation Committee which was set in 1961 submitted its final report in February, 1963. This report was duly passed by the Faculty of Music & Fine Arts and was also approved by the Academic Council and came into force from the session 1963-64. In the transitional period old courses and its Examinations had to be maintained side by side with the new Three Year Degree and Three Year Diploma Courses in Music during 1963-64 session.

4. New Addition to the Teaching Staff

1. One post of Reader in Vocal Music was sanctioned by the University in the beginning of 1963. Interview for this post was held in September, 1963 and Shri M. R. Gautam was selected for this post. He joined the College from November 21, 1963. This is an important addition to our College Staff.

5. Research Section

Editing work of Saṅgītarāja was started in our Research Section in 1958. But, I am glad to inform that after five years of strenuous work, the first part of Saṅgītarājā has come out of Press. This work was written in Sanskrit verses by Rana Kumbha in the 15th Century and it had 16,000 verses. There were 12 MSS of Saṅgītarāja in Bikaner Library. The staff of Research Section copied all these MSS and with the help of the Staff of the Research Section, our Reader Dr. (Miss) Prem Lata Sharma completed the editing of Saṅgītarāja and its first part comprising about 9000 verses has been published. Saṅgītarāja, though not of much use to the living contemporary and current Hindustani Music, is definitely an addition to the literature of historical musicology in Hindustani music. The publication ceremony of first part was performed by Dr. Karan Singh, Sadare-Riyasat, Jammu & Kashmir, on the 26th December, 1963 and expenses of this publication were met from the Nepal Rajya Sanskrit Series Funds.

6. Distinguished Visitors & Extra Curricular Activities

(i) This year we had three concerts by top-ranking artists—(1) Pt. Vinayak Rao Patwardhan on 13.2.63, (2) Khan Saheb Allah Rakkha of Bombay on 26.2.63 and (3) Shri D. K. Datar of Bombay on 14.4.63. Besides this, a Tabla Recital by well-known Radio Engineer, Shri Gaitonde, B. Sc., was presented on 18.3.63 in this College.

We were fortunate to get a scholarly lecture on 'Gharanas' by Shri V. H. Deshpande, author of a well-known book entitled, 'Gharane-Dar-Gayiki'. Shri V. H. Deshpande happened to pay a visit to Varanasi and he accepted the request to deliver a lecture which was very much appreciated by the staff and the students of the College.

(ii) In the Instrumental Section of our College, one 'Śruti Vīṇā' has been prepared by Dr. Lal Mani Misra, Reader in Instrumental Music with a view to show and explain 22 Śrutis of Bharata. The eminent scholars and musicians have visited to see the instrument and the production of 22 Śrutis on the same.

(iii) As usual this year also the Vishnu Digambar Jayanti was celebrated on a grand scale from 31st August to Ist September, 1963 and four concerts were organised on this occasion. All the members of the staff and senior students of the College took part in the same. All the concerts were very well attended by music lovers.

(iv) The Nepalese Delegation of dancers and musicians which visited India in September, 1963 paid a visit to our College. About 20 members carefully watched the training of students in the College and were highly pleased with the high standard maintained by the College. A concert was arranged on this occasion in which some College items and some Nepalese items were produced.

(v) Mrs. Kar, a disciple of Ustad Allauddin Khan, gave a Sitar recital in the College on 18th September, 1963 which was well attended by our students and staff members.

(vi) Pt. Vishnu Narayan Bhatkhande's Smriti Day was observed on the 29th September, 1963 at 9.00 A. M. in the College. Principal B. R. Deodhar gave recital of some rare Ragas and Dr. Lal Mani Mishra his most enjoyable Veena Recital.

(vii) Shri P. N. Barve, Programme Executive, A. I. R., New Delhi, invited to give a recital of vocal music at 6.00 P. M. on 9.10.63 in the College. His line of singing was very much appreciated.

(viii) Shri Nad-Yogi Swami D. R. Parwatikar, B. Sc. paid a visit to Varanasi. Our College approached the University authorities for help in arranging a concert of Swamiji. The University authorities readily agreed and provided to the College such help as mikes and loud-speakers, light, stage arrangement and over and above a sum of Rs. 101/- (Rupees one hundered & one only) for being presented to Swamiji as honorarium. I thank our Vice-Chancellor for this kind gesture.

INSTRUMENTAL SECTION

A Museum of Musical Instruments on a small scale has been set up in our College premises from this year. There are different types of orchestral instruments including two huge instruments—one Sarangi of 7 ft. height and one Tanpura of 6 ft. 7" height. These two instruments were manufactured in Miraj in the year 1910 for Gandharva Mahavidyalaya according to the specifications given by Late Sangeet Maharshi Pt. Vishnu Digambar Paluskar. They were the main attraction of the Instruments Gallery of the Gandharva Mahavidyalay at Bombay. Since 1922 they were lying at Nasik at the Ram Nama Ashram, Panchvati. Our College getting the information of these instrumental monuments desired to acquire them for our Instrumental Galley. A request for a special grant of Rs.1000/- was made to the University which was provided and the instruments were procured. Now they are in our College Museum of Instruments.

ललित कला विभाग (श्री कला संगीत भारती)

काशी हिन्दू विश्वविद्यालय में ललित कला (फाइन आर्ट्स) की शिक्षा १९४९ में प्रारंभ हुई। १९५० में इसे कला-संगीत भारती महाविद्यालय का स्वरूप प्रदान किया गया। चित्रकला एवं मूर्तिकला में चार-चार वर्ष का डिप्लोमा कोर्स १९५० से १९६३ तक चलता रहा। तृतीय पंच वर्षीय योजना के अन्तर्गत १९६१ में ललित कला पुनर्गठन समिति का निर्माण हुआ। समिति के निर्णय के अनुसार जुलाई १९६३ से पुराने डिप्लोमा कोर्स को हटाकर नए ढंग से तीन वर्ष का डिप्लोमा और तीन वर्ष का डिग्री कोर्स प्रारंभ किया गया। इसके अनुसार परीक्षा में उत्तीर्ण होने पर क्रमश: 'डिप्लोमा इन फाइन आर्टस' तथा 'बैचलर इन फाइन आर्टस' के प्रमाणपत्र दिए जाने की व्यवस्था है।

नए पाठ्यक्रम के अनुसान प्रथम वर्ष डिप्लोमा से लेकर द्वितीय वर्ष डिग्री कोर्स की सभी कक्षाओं में क्षात्र इस वर्ष भर्ती किए गए और इन सभी कक्षाओं में नियमित शिक्षा जुलाई १९६३ से प्रारम्भ हो गई। इस समय ललित कला विभाग में चित्रकला, मूर्तिकला एवं एप्लाइड आर्ट्स एण्ड क्रैफ्ट्स की शिक्षा दी जा रही है। क्षात्रों की संख्या भी उत्तरोत्तर बढ़ती जा रही है। आगामी वर्ष जुलाई से नए प्राध्यापकों की नियुक्तियाँ भी होने वाली हैं।

अगले वर्ष डिग्री कोर्स की फाइनल परीक्षा में छात्र प्रविष्ट होंगे। आशा है कि ललित कला में स्नातकोत्तर (मास्टर इन फाइन आर्ट्स) डिग्री कोर्स के पाठ्यक्रम की व्यवस्था भी शीघ्रातिशीघ्र हो जायगी। हमारे कालेज के वर्तमान प्रधानाचार्य डॉ० बी० आर० देवघर महोदय और विश्वविद्यालय के वर्तमान अधिकारियों की महती कृपा के कारण ही ललित कला विभाग का यह विस्तार एवं स्वरूप सम्भव तथा चरितार्थ हो सका है। केन्द्रीय विश्वविद्यालयों में एकमात्र अपने ही विश्वविद्यालय को यह गौरव प्राप्त हो सका है कि यहीं पर सर्व प्रथम ललित कला में डिग्री कोर्स के शिक्षण का अभिनव प्रयास साकार हुआ है।

TEACHER'S TRAINING COLLEGE

The College reopened after summer vacation on 9th July, 1963. A new member was added to the teaching staff—Shri Shyama Das Chatterjee who joined as Instructor in Art. Admissions had already been made in B. Ed. class. Therefore, the work began as soon as the College reopened. M. Ed. admissions were completed by 25th July. Accordingly lectures in M. Ed. began a little later.

Total Admissions :

B. Ed.	126
M. Ed.	13
Ph. D.	1

After the first round of practice teaching there was a Scout Masters' Training Camp organised by Mr. Williams and Miss Samson of Hindustan Scouts. The Camp was located at Rajghat in the Vasanta College premises. It was a 10 day Camp in which all the male and female students of the College participated. They were awarded certificates after the training.

Mr. Gumar Afred Janson, Director of the Educational Department of the Swedish Youngmen's Christian Association and Young Women's Christian Association and also the Director of Secretaries Training Colleges of the Swedish Young Men's Christian Association, visited the College on 10. 10. 63. He gave an account of the educational system of Sweden.

Kumari Adarsha Bala Gajri, one of our old students from East Africa also visited the College in November, 1963.

The Extension Services Department of the College organised two seminar-cum-workshop in Hindi with a view to prepare a handbook for the Hindi teachers of Junior High School, classes. The resource personnel were Pt. Ramapati Shukla of Teacher's Training College, Banaras Hindu University, Pt. Sita Ram Chaturvedi, Principal, Binani Multi-purpose School, Calcutta and Pt. Bhudeva Shastri of Hindi Institute, Agra. A seminar on 'Gandhiji's Contribution to Educational Thought' was also organised in the College in which participants came from far and near including one from Navjiwan Trust. The department also instituted a short course in the teaching of English in which 146 teachers from secondry schools of this region participated. Prof. Dawson of British Council and Mr. R. K. Yadava of Teacher's Training College, Banaras Hind University were the resource personnels. A programme of seminar readings was taken up like last year. There were 12 papers read on topics of secondary school interest. Ten best articles were sent to the State level. The department published 4 pamphlets containing the reports of previous seminars.

Results of 1963 Examination.

B. Ed. 100%
M. Ed. 100%

CENTRAL HINDU COLLEGE, KAMACHHA

The Central Hindu College, Kamachha, established in the year 1949 for running the Intermediate classes of the Banaras Hindu University has been now offering a variety of technical courses. With the transfer of Pre-University Courses in Science to the College of Science in July 1963, this College is now running a few technical conrses, viz., First Year of the Five Year Integrated Course in Technology, Pre-Medical Course, First Year of the Four Year B.Sc. Course in Agriculture and the First Year of the Four Year B. Pharm. Course. The number of students admitted to these various courses stood at 317, 87, 52 and 27 respectively as on Sept. 19, 1963. The total strength of the College thus consists of nearly 500 students including 22 girl students (21 in Pre-Medical Course and 1 in B. Pharm.). The students of this College are drawn not only from all the fourteen States of the country but also from certain foreign countries such as Thailand, Nepal and East Africa.

RESULTS

The following table gives a comparative picture of the results shown by the College in various University Examinations during 1962 and 1963 :—

1962

Course	No. of students appeared	No. of students passed	Pass percentage	No. of Ist Div.	No. of IInd Div.	No. of IIIrd Div.	No. of suppl. passed
Technology	239	205	85.77%	52	151	2	-
Pre-Medical	36	27	75%	9	18	-	-
Iyr. Agriculture	27	22	81.48%	5	15	2	-
1963							
Technology	374	350	93.58%	79	217	4	50
Pre-Medical	53	40	75.47%	14	26	-	-
Iyr. Agriculture	34	25	73.53%	4	13	-	8

The result in the Pre-University (Science) Examination was 59% in 1963 as against 54.8% in 1962.

Teaching staff

The teaching staff the College consists of about 30 young teachers with Dr. B. Chakravarti as Principal. Two of the teachers of this College, Shri Jagdish Prasad (Chemistry) and Shri A. V. Krishna Rao (Physics), were awarded this year the Ph. D. degree in their respective field.

General Activites

(a) The College has introduced since this academic session a weekly programme of literary debates which has aroused considerable interest among the students and the teachers.

(b) The Annual Sports Meet of the College was held on December 9, 1963 with great joy and enthusiasm.

(c) A batch of students and teachers from the Columbia University (U.S.A.) visited the College and were taken round the various departments early during this session.

(d) Another noteworthy feature of this year has been the introduction of the "New Series of University Extension Lectures in the City." The lectures are delivered by eminent University professors every Saturday and are becoming very popular.

Annual Day

The College Day was celebrated on Jan. 16, 1964 with Justice N. H. Bhagwati, the Vice Chancellor of the University, as Chief Guest. The Shargha Hall and Kashi Naresh Hall of the College were tastefully decorated on the occasion. A short programme of variety entertainment was also presented by the students of the College.

Dr. B. Chakravarti, in his Annual Report, brought out the All-India character of the institution and the results shown by it at the various University Examinations of 1963. Referring to the New Series of University Extension Lectures, Dr. Chakravarti observed, "The Scheme which would enable the University to discharge its social obligation as the brain-trust of the community has infinite possibilities. It can lead to a fresh orientation in the social impact of University education by keeping before the ken of the general public the ever expanding frontiers of human advancement."

The Vice Chancellor, in his brief address, applauded the spirit of self-help among the students who had started a mess in Dr. A. B. Hostel. He appreciated the excellent cultural programme presented by the students and advised them to take advantage of the city extension lectures being delivered in their College.

COLLEGE OF INDOLOGY

The College of Indology was founded in the year 1950. The foundation-stone was laid by Dr. Rajendra Prasad, the first President of the Indian Republic. The College is housed in an independent building. It caters for postgraduate teaching and research. Ever since the foundation of the College it has attracted students from all parts of India and from foreign countries. At present there are 24 foreign students studying in this College and doing research. It is proposed to develop this College as a centre of oriental studies in pursuance of which the departments covering the history and culture of other countries of Asia are proposed to be added in due course. There is already a provision for the teaching of eight Asian languages, namely, Tibetan, Cambodian, Burmese, Thai, Old-Javanese, Indonesian, Singhalese and Mongolian. The number of research students working in the various departments of the college is 55. Besides the work of the archaeological excavation and exploration, the College has other projects, e.g. the preparation of Subject-index of the *Puranas*, a comparative study of Buddhist Iconography from Tibetan and Nepalese sources, etc.

(1) The following research scholars got Ph.D. degree :

A. 1. Miss Gayatri Agrawala-Ans.Ind.Hist.Cul.Arch.
   2. Shri Balramji Srivastva ,, ,, ,, ,, ,,
   3. ,, Jai Shanker Mishra ,, ,, ,, ,, ,,
   4. Km. Saral Srivastva ,, ,, ,, ,, ,,

B. 1. Shri Ganesh Shridhar Shastri— Sanskrit

(2) The following research scholars submitted their Ph. D. Thesis :

A. 1. Shri Narendra Chandra Nath—Sanskrit
 2. ,, Braj Behari Chaubey — ,,

(3) The following research scholars are likely to submit their Ph.D. Theses shortly :

A. 1. Shri Hit Narain Jha -Anc.Ind.Hist.Cul.Arch.
 2. ,, HariAnant Phadke —do—
 3. ,, Bhola Pd. Srivastava —do—
 4. ,, Ram Swaroop Misra —do—
 5. ,, Thakur Pd. Varma —do—
 6. ,, Gulab Lal Srivasva —do—
 7. Km. Lily Srivastava —do—

B. 1. Shri Amal Dhari Singh- Sanskrit
 2. ,, Man Singh - ,,

C. 1. Shri Basisth Narayan Singh -Ind. Phil. & Religion
 2. ,, Minoru Kesai - —do—
 3. ,, Anant Pd. Misra - —do—

D. 1. Shri Gadgeshwar Jha -Art & Architecture
 2. ,, Surendra Kumar Srivastava - —do—

Academic Activities

(1) The following five research seminars were held during the session 1963-1964 :

	Title	*Speaker*	*Date*
1.	An Approach to Research in Sanskrit	Dr. S. Bhattacharya	7-8-1963
2.	Biographies in the Early Medieval Sanskrit Literature : A Fresh Approach	Dr. V. S. Pathak	21-9-1963
3.	Ramayana Men Sangit	Km. Dharmawati Srivastava	5-10-1963
4.	Swarita-Swara in Ṛgveda	Prof. N.K.S. Telang	17-10-1963
5.	Some Problems in Indian Logic and Epistemology	Dr. N. K. Devaraja	1-2-1963

(2) No. of foreign scholars admitted to the College from different countries–U.S.A.–5, England–2, Holland–1, Poland–1, Belgium–1, Combodia–1, Japan–2, Indonesia–1, Burma–1, Nepal–6, Cylon–1.

(3) Foreign Visitors and Distinguished Guests–
   (1) Prof. Edwin Luther Copeland (U.S.A.)
   (2) Sra De la Lama, Secretary, Oriental section, El Colegio de Mexico, Mexico.
   (3) Codrington, School of Oriental & African Studies, London.
   (4) A.K. Warder, Head of the Deptt. of Indology, Toranto University, Canada.
   (5) Dr. R.C. Majumdar.
   (6) N.R. Ray, Vagishwari Prof. of Art.

(4) Excavations at Rajghat during this session got an encouraging start with the discovery of the Gupta gold coins of Chandragupta I, Kumaragupta I and Skandagupta. The detailed report of the excavation will soon be published.

SCIENCE COLLEGE

The strength of the College at the beginning of the 1963 session was as follows—

P. U. C.	...365
B. Sc.	...807
M. Sc.	...380
Research.	...169

At the 1963 Examination of the University 60 students passed B. Sc. (old) Examination, 146 students B. Sc. Three Year Degree Course Examination and 157 students passed M. Sc. Examination. Besides, 20 research students were awarded Ph. D. Degree at the last convocation of the University.

Some of the important events of the year

'1. Dr. S. K. Vasistha participated in the meeting which was hold to discuss working of Cancer.

2. The Central Board of Biology held its annual meeting in the Department of Botany in October 1962. This was presided over by Prof. H. Kabir, Union Minister of Scientific Research and Cultural Affairs, New Delhi.

3. Dr. S. P. Roy Choudhury has been invited to visit different research centres in U. S. S. R. on a Cultural Exchange Programme.

4. Dr. J. P. Thapliyal attended and presented a paper in the International Seminar on "Physiology of Reproduction" held in Bombay from 21st to 24th Feb. 1963. Further, he was invited to give a talk in the International Symposium on Comparative Endocrinolgy to be held in Pusa from 20th to 25th July 1964.

5. Dr. M. S. Kanungo has been nominated as a member of the Biology Panel of the National Council of Educational Research and Training, Ministry of Education, New Delhi.

6. Dr. R. L. Singh, Professor and Head of the Department of Geography, has been invited to deliver a course of lectures 'On General Geography of Asia' at El Celegie de Mexico during the first semster of 1964 from February to June.

7. The Department of Geology and Geophysics is cooperating with the India Metereological Department at their request through U.G.C. in the study of Ozone Observations during the International Quest Sun Year 1965-66. This work is going on with the same cooperation as it was done during the International Geographical Year 1957-59.

8. Dr. Nandlal Singh, Head of the Department of Spectroscopy has been appointed as the Director of the Physics Cell for preparing text books of Physics in Hindi.

9. Some members of the teaching staff have proceeded abroad on study leave for obtaining higher experience and for securing higher degrees Among them mention may be made of

Dr. M. L. Rustogi of Physics Department
Shri C. M. Pathak of Spectroscopy Department
Dr. H. S. Sachadeva of Chemistry Department

Shri M. N. Mehrotra of Geology Department
Dr. B. K. Dutta of Geophysics Department
Shri J. N. Rao and Shri G. N. Chaudhuri of Botany Deptt.

10. Dr. H. J. Arnikar, Reader in the Department of Chemistry has joined the Poona University as Professor.

11. Dr. B. R. Sant, Lecturer in the Department of Chemistry, resigned to accept a position with I.C.I.

12. For the Department of Zoology, besides the existing field of research, two more branches, namely Tissue Culture and Experimentol Entomology are being developed.

13. For the Department of Geography it is proposed to establish a soil laboratory.

14. In the Department of Geology research work done at present on the Kumaon Himalayas under the guidance of Dr. I.C. Pande will be intensified since the study of Himalayas has become of national importance since the Chinese argession.

15. M. Sc. Applied Geolgy courses are to be started.

Grants

1. A grant of Rs. 4,18,220/—was received by Prof. A.R. Verma from the P. L. 480 American Scheme for conducting research work in Solid State Physics. We are importing one Philips E. M. 200 Electron Microscope under the same Scheme costing about Rs. 2,25,000/—.

2. Two projects—one in Plant Ecology under Prof. R. Misra and the other on Mycology under Dr. R. Y. Roy—were approved under the P. L. 480 Programme of U.S.A.

3. An X-Ray apparatus (Therapy Type) has been purchased from a grant of 10,000/—which was given by the Rockfeller Foundation to Prof. S. P. Ray Chaudhuri for research in cytogenetics. The apparatus is being constantly used for the study of X-Ray effects on animals.

4. Under a Ford Foundation Grant of 1,20,000/—given to Prof. S. P. Ray Chaudhuri and Dr. J. P. Thapliyal two Research Assistants have been appointed for research in Reproductive Physiology.

Publications

The teachers have contributed papers to the Indian Science Congress and other recognised societies of well known standing. The Ph. D. thesis of Dr. S. L. Kayasth has been accepted for publication by our University and it is being printed at our B.H.U. Press out of funds granted by U.G.C.

Sports

Activities on the sports ground were very heartening. Our team won the University Championship this year. We have been retaining the individual championship for the last several years and this year Shri M. P. Singh and Jagda Nand Singh were the joint University Champions. It is remarkable that Shri M. P. Singh had been champion earlier as such he was awarded President's Gold Medal and a College Blue. Other outstanding sportsmen are Shri K. L. Singh, Shri Bhola Nath and Shri Markandey Singh. Our College participated in the District Sports and was runners-up. Shri Jagda Nand Singh was declared Champion at the Sports Meet.

THE DEPARTMENT OF LIBRARY SCIENCE

Introduction

The Banaras Hindu University instituted a B Lib Sc Course from this year. It had been conducting a Diploma Course in Library Science since 1942. The B H U Library Science Association had been very active during the year. A large number of students who have been holding M A Degrees in various subjects, have been able to contribute to several activities organised by the B H U Library Science Association during the year.

INAUGURATION OF THE DEGREE COURSE

The newly instituted B Lib Sc Course was inaugurated on 10 September 1963 by Shri M C Bijawat, Pro-Vice Chancellor. Shri D Subrahmanyam, President, U P Library Association presided over the function. Shri P N Kaula welcomed

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the guests. In his welcome address, he traced the history of library education in India and stated the importance of librarianship. He said that it was the vision of Dr S Radhakrishnan, the President of India who in 1941 as the Vice Chancellor of this University invited Dr Ranganathan to draft the syllabus of the library science course and since that time, the Post Graduate Diploma Course had been conducted by the University. He urged the need for instituting the Master's Degree Course in Library Science as well. Shri Kaula gave an appreciative account of the past achievements of the department and the working of the association. The Pro Vice Chancellor appreciated the work of Dr Ranganathan in the field of library science and hoped that the M Lib Sc Course will be started under the able leadership of Shri Kaula. The Pro Vice Chancellor further stated that the ultimate aim of library education was to render library service efficiently and without any loss of time. He was convinced that the large number of post graduate students who had applied for admission to the course, showed awareness of the potency of library science. Mr D Subrahmanyam gave an account of the library science teaching at the University and his desire to have the Degree course in Library Science instituted at the University. Shri S R Gupta proposed a vote of thanks. The function came to close by a lively cultural programme organised by the Cultural Secretary in which some leading poets of Varanasi and outside were invited to participate.

TUTORIALS AND SEMINARS

The convention of holding Tutorials and Seminars has proved very beneficial to the students. Tutorials have been conducted as a regular programme of teaching. Four seminars were also organised which were participated very actively by the members.

Seminar 1 : *Should there be a Title Entry for each and every book ?*

This seminar was conducted by Shri H D Sharma, Professional Senior of the University Library. He stated the

need for the seminar on this subject. The discussion was led by Shri M N Srivastava, and was participated by a number of students. The majority of the students felt that most of the books should have Title Entries with an eye on local variations. Shri P N Kaula inaugurated the seminar and stated the procedure and utility for conducting such seminars.

Seminar 2 : *Problems of Book Selection in a Public Library*

This seminar was led by Shri M C Srivastava. Several problems were presented by the leader and as the result of the discussion, the following conclusions were drawn out :

1 A librarian should finally select the books taking into consideration the recommendations of library committeee, expert committee and the library staff committee;
2 Proper care should be taken before censoring or rejecting books which are in demand;
3 Subject specialisation should be done and the usefulness of library cooperation and coordination encouraged;
4 There should be the weeding of obsolete and outdated books at regular intervals.

Seminar 3 : *Library Service in America and India*

This seminar shall be remembered as an outstanding event of the year. It was organised at the university level in corporation with the USIS, New Delhi. The seminar was conducted from 8-9 October 1963. It was inaugurated by Justice N H Bhagwati, Vice Chancellor, BHU. Shri P N Kaula welcomed the Vice Chancellor and stated the purpose of the seminar. Five sessions of the seminars were held in which two sessions each were devoted in discussing Library Service in India and Library Service in America respectively. In this seminar many ideas on library Service were clarified by the participants. Working Papers had also been brought by Shri P N Kaula and Shri D G Donovan, Director, USIS Libraries, New Delhi who participated on behalf of USIS. Shri D Subrahmanyam was the Chairman of the first two

sessions and the concluding session. Shri P N Kaula was the Chairman of the third and the fourth sessions. The chief participants were : Shri B N Ghatak, Shri H D Shaıma, Shri J C Binwal, Shri M Rajbee, Shri R N Kaul, Shri L S Shukla, Shri R A Lal, Shri L M P Singe, Shri J S Tiwana, Shri S R Gupta, Shri U M Thakur, Shri A Chatterjee, Shri B N Shukla and a number of students. The Library Service in India and Library Service in America were analysed in perspective which has been of great help to the students.

Seminar 4 : *Problems of Indian Names*

This seminar has been very helpful in understanding the peculiarities and the problems of personal authorship. Students belonging to each cultural region had prepared a list of several types of personal names which were discussed under the directorship of Shri P N Kaula. It was a very lively library seminar on a very lively subject.

LECTURES

During the year several lectures by eminent librarians and scholars were organised.

(*a*) *Prof S Bashiruddin*

Prof S Bashiruddin, Director, Rajasthan University Library, Jaipur stressed the need for developing reading habit and understanding various subjects. He wanted the librarians to be analytical and practical in their technical jobs. Shri P N Kaula welcomed Prof Bashiruddin and analysed some of his outstanding achievements. Shri S R Gupta proposed a vote of thanks.

(*b*) *Dr C P Shukla*

Dr Shukla stated the role of associations and especially the shortcomings of the Indian Library Association and suggested certain ways and means of uplifting the associations. He felt that the amendments to the constitution of ILA had become a necessity. Shri P N Kaula welcomed Dr Shukla and asked for making ILA a dynamic national organisation.

(c) Shri G N Nagar

Shri Nagar, Co-ordinator, Extension Services, Teachers' Training College, explained at length the shortcomings of educational pattern in India. He did not want the teaching to be examination-centered but explained the utility of having subject-centered teaching. Shri Kaula explained several factors responsible for the lower standard of education and he urged the need for the greater use of libraries.

(d) Dr Lester Asheim

Dr Asheim, Director, International Relations Office, American Library Association and former Dean of Library School, Chicago University talked on the Problems of Education for Librarianship. He analysed the problems as under : 1 Need for good educational background; 2 Greater emphasis on theoretical aspects of training; 3 Importance of library training at different levels; and 4 Opportunities for the trained librarians. Dr Asheim stated that Colon Classification was the best suited for Indian libraries and Dewey Decimal Classification was not meant to be used by modern libraries. He thought that the library science course of BHU was the best course available in India. Shri Kaula analysed several other problems concerning library education in India.

(e) Shri Sen Gupta

Shri Sen Gupta, Deputy Librarian, Calcutta, spoke on Recent Trends in Cataloguing. He urged the need for developing uniform practices in Indian Names.

(f) Shri N N Gidwani

Shri Gidwani, Librarian, Nagpur University, explained the importance of Librarianship and connected problems.

OTHER ACTIVITIES

(a) Independence Day

The Independence Day was celebrated on 15 August 1963 by hoisting the National Flag. Shri Kaula told the students and members of the staff the need for cultivating

the spirit of unity, hardwork, dedication and sacrifice. He felt that the librarians would be second to none in helping the nation to be educated and research minded. He also stressed the roles of librarianship.

(b) Book Exhibitions

In the month of October, 1963 the India Book House, Calcutta, organised a book exhibition in the B H U Library. The students helped the organisers in the planning, setting, organising and supervising the exhibition for the visitors. The exhibition was opened by Justice N H Bhagwati, the Vice Chancellor of B H U.

A number of exhibitions were held from 26 to 31 December 1963 in the BHU library. These exhibitions were organised by the USIS, British Council, Russian Embassy, German Embassy, Printice-Hall and the Hindi Department of B H U. The exhibitions were organised in order to make the scientific and technical books, paper back books, and Hindi books known to the visitors. The students helped in setting up these exhibitions in several ways.

(c) Contact with UPLA

The students had the opportunity of attending several meetings organised by UPLA. The Library Week celebrated by UPLA was attended by the students. Several students like Shri B N Shukla, Shri U M Thakur spoke on various occasions. They had also an opportunity of attending the annual meeting of the association at Allahabad on 6 October 1963.

(d) Sports Day

Another memorable event of the year has been the Sports Day which took place due to the interest taken by Shri Kaula and Shri H D Sharma. The Association created a history in the library education in India by celebrating the Sports Day. Prior to that, games were organised outside the library. It was due to the enthusiarm and the sportsmanship of Shri J S Tiwana, Games Secretary, that the games and the

sports wers organised independently during the year. Several matches were held between the students and the staff of the Library. In the sports, several students and the members of the library staff were able to achieve distinction. Shri B K Singh won the championship and was declared the best sportsman and athlete in the competition.

(e) *Strength in Teaching Staff*

With the institution of B Lib Sc Course, the Department was able to have another full time lecturer in Library Science. Shri K N Gupta, M A, M Lib Sc, joined the Department in October 1963 and has been very hepful in taking much interest in the work of the Department and the students. Shri H D Sharma M A, M L S (Michigan) who joined the Library as Professional Senior, has been taking classes as well.

CONCLUSION

It is needless to emphasise that the activities of the Department and BHULSA have been multidimensional. The College Day has yet to be celebrated and several other competitions in the academic field such as essay writing, debate and seminar competitions will also be conducted. There is a programme to have professional tour of the students to Calcutta to visit several libraries. As a result of manifold activities and effective teaching the students will return to their respective institutions and places with rich experience and much enthusiasm for library service after the completion of the course. It is my duty as the Secretary of BHULSA to thank all the teachers for the interest they showed during the year in guiding the various activities.

S R GUPTA
Secretary, BHULSA

OBJECTS OF THE UNIVERSITY

1. To promote the study of the Hindu Shastras and of Sanskrit Literature generally as a means of preserving and popularizing, for the benefit of the Hindus in particular and of the world at large in general, the best thought and culture of the Hindus, and all that was good and great in the ancient civilization of India,

2. To promote learning and research generally in Arts and Sciences in all branches,

3. To advance and diffuse such scientific, technical and professional knowledge combined with the necessary practical training as is best calculated to help in promoting indigenous industries and in developing the material resources of the country: and

4. To promote the building up of character in youth by religion and ethics as an integral part of education.

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